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# USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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8 July 1983

# USSR REPORT

## CONSTRUCTION AND RELATED INDUSTRIES

No. 93

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## CONSTRUCTION PLANNING AND ECONOMICS

### CONSTRUCTION INDUSTRY'S COSTS, PROFITS DISCUSSED

Moscow FINANSY SSSR in Russian No 4, Apr 83 pp 40-45

[Article by V. V. Ostapenko, candidate of economic sciences; sector chief, Scientific Research Finance Institute; and Yu. D. Karelin, senior research associate, Scientific Research Finance Institute]

[Text] The Basic Directions of Economic and Social Development of the USSR in 1981-1985 and the Period Up to 1990 call for a more intensive economy program, for the development and implementation of measures to eliminate losses in construction, for economizing rolled ferrous metals and materials (7-9 percent) and cement (5-7 percent), and for lowering the net cost of products and works. In this regard, it is important to articulate the factors that are responsible for changing net cost and profit and to determine the reserves that exist for lowering costs and increasing profits in each branch of material production.

There was an appreciable increase in the profits for construction work performed in 1971-1980. Nonetheless the dynamics of profit during these years did not remain the same: profit rose between 1971 and 1975 and declined slightly between 1976 and 1980. During the 10th Five-Year Plan, profit in the construction industry rose by 1.7 billion rubles as a result of the increase in the volume of work performed whereas owing to the change in the estimated cost of the work resulting from the reduced coefficients for construction and installation starting in 1976, profit declined by 0.7 billion rubles and as a result the increase in cost per ruble of work performed was by 2 billion rubles. Thus, the greatest influence on the lowering of profit from the performance of work under the 10th Five-Year Plan was exerted by the increase in the net cost of this work. Calculations showed that material inputs per ruble of cost of the work performed increased during that period by 1.3 kopecks, that wages rose by 1.1 kopecks and amortization deductions increased by 1.1 kopecks.

The basic reasons for the higher cost of materials per ruble of cost of construction work are: the overexpenditure of these materials compared with the established norms, the substitution of costlier materials, and price rises on individual types of construction materials compared with those specified in the estimates. Overexpenditures and substitutions of costlier materials lead to direct increases in the contractor's cost per unit of work and to reduced profit.

Every year, considerable quantities of materials are either lost or else are irrationally used. Thus in 1979, the actual expenditure of cement throughout the USSR Ministry of the Construction Industry was higher than the norm (average) by 13.3 percent; rolled metals -- 5.6 percent; and lumber -- 2.9 percent. Altogether such losses in the construction industry run to almost 2 billion rubles a year.\*

Higher wholesale prices on construction materials and fuel also lead directly to the higher net cost of construction and installation work. For example, throughout the USSR Ministry of the Construction Industry, additional costs associated with the raising of wholesale prices on supplies and fuel compared with those indicated in the estimates were determined as 3.1 percent of the estimated cost of the work in 1981. In the same year, the budget compensated the same ministry for additional costs amounting to 2.7 percent of the estimated cost.

New wholesale prices on industrial products took effect on 1 January 1982. In particular, wholesale prices on ferrous metallurgy products were raised by 20 percent, cement -- 26 percent; lumber -- by 40 percent, etc. This led to an increase in the net cost of construction and installation work and in the amount of compensation paid to contractors in 1982 and in 1983 for additional costs associated with the raising of these prices. New estimated prices taking the new wholesale prices into account are slated to take effect in construction starting in 1984.

The principal reason underlying the increase in wages per ruble of cost of work performed during this period is the higher growth rate of wages (14.4 percent) compared with the growth rate of labor productivity (11 percent). Amortization deductions per ruble of cost of work performed rose as a result of the lowering of the output-capital ratio in construction (by 22.9 percent), which was associated with the rising cost of construction machinery and mechanisms per unit of productivity of the given machinery and mechanisms and with the underutilization of means of labor. Structural changes in the volume of the work in turn influenced the dynamics of material-intensiveness, labor-intensiveness and amortization-intensiveness of construction work and consequently change in net cost and profit volume as well. This number includes changes in the territorial, branch and reproductive structure of capital investments and in the structure of various types of construction.

Today, changes in the territorial, branch and reproductive structure of capital investments tend to raise rather than lower the net cost of construction and installation work. Thus during the 10th Five-Year Plan, there was an increase in the share of capital investment and construction-installation work in the northern and eastern parts of the country where the net cost of construction is higher compared with the central regions. For example, in 1980 costs per ruble's worth of work turned over to the client by the Ministry of Construction in the Far East and Transbaykal Regions were 12.7 percent higher than the national average.

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\*I. N. Dmitriyev, "Economizing Materials in Construction," EKONOMICHESKAYA GAZETA, No 18.

Between 1976 and 1980, the growth rates of capital investment in the technical retooling and reconstruction of enterprises significantly surpassed the rate of increase of the overall volume of capital investments. In 1980, approximately 22 billion rubles or 16.5 percent of the overall volume of capital investment in the national economy was in technical retooling and reconstruction. Construction and installation work in the overall volume of capital investment and reconstruction comprise approximately 35 percent. At the same time, the costs of construction organizations engaged in the technical retooling and reconstruction of enterprises were higher than the unit cost of new construction. This is due to the need to dismantle individual structural elements of buildings or parts of buildings, to the need to dismantle some of the equipment, to the crowded working conditions, to the higher share of nonstandard components used by construction organizations, etc.

For example, according to estimates of Pervouralsk construction organizations engaged in the technical retooling and reconstruction of a number of metallurgical enterprises (shops), the cost of performing this work is approximately 30 percent higher than the cost of new construction. At the same time, the capital investment per unit of increased capacity in new construction is higher than in the case of technical retooling and reconstruction (for example, 2.7 fold in the electrical equipment industry; 1.5-2.9 fold in machine tool construction; and 1.4-1.6 fold in instrument making). This is because some of the means of labor are preserved.

With the increase in the share of technical retooling and reconstruction work and in connection with the higher cost per unit of work occasioned by this structural factor in physical terms, the contractor's profit per unit of work in value terms diminishes to a lesser degree and under certain conditions may even increase. This is associated with the application of a system of correction factors to the estimated norms used in determining the estimated cost of various volumes of technical retooling and reconstruction since 1981. The application of these factors raises the estimated cost of construction and installation work in the reconstruction and technical retooling of enterprises in ferrous and nonferrous metallurgy, the chemical industry and the petrochemical industry by 11-13 percent and for other branches of material production by 10-11 percent compared with the estimated cost of the same volume of work in the new construction of projects of the same type.\*

The question of substantiating the values of the correction factors requires further elaboration. Some economists recommend raising the correction factors so that they would correspond to the actual increase in cost per unit of work in physical terms in the case of technical retooling and reconstruction (or, what amounts to the same thing: per ruble of cost for comparable work) compared with new construction. It is impossible to agree with these conclusions because their authors fail to consider the fact that the net cost of construction and installation work is only part of its estimated cost.

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\*EKONOMIKA STROITEL'STVA, 1980, No 4, p 64.

The profit of the contractor organization, which previously performed new construction but subsequently became engaged in the technical retooling and reconstruction of enterprises, will not change if

$$E_n - C_r = E_r - C_r,$$

where  $E_n$  and  $E_r$  are the estimated cost of construction and installation work in new construction and reconstruction, respectively; and  $C_n$  and  $C_r$  are the cost of performing new construction and reconstruction work, respectively.

Transforming the equation, we find

$$E_r = E_n - C_n + C_r,$$

$$k_{\text{corr}} = \frac{E_n - C_n (I - k_i)}{E_n},$$

$$k_{\text{corr}} = I - c (I - k_i),$$

where  $k_{\text{corr}}$  is the correction coefficient of estimated cost of construction and installation work used in determining the estimated cost of technical retooling and reconstruction ( $k_{\text{corr}} = \frac{E_r}{E_n}$ );

$k_i$  is the coefficient of increase in the cost of technical retooling and reconstruction compared with new construction ( $k_i = \frac{C_r}{C_n}$ ); and

$c$  is cost per ruble's worth of construction and installation work in new construction ( $c = \frac{C_n}{E_n}$ ).

For example, if the cost per ruble's worth of construction and installation work in new construction is 80 kopecks based on existing standard estimates (and in the technical retooling and reconstruction of existing enterprises, this cost is increased by 20 percent), when the transition is made to technical retooling and reconstruction, profit will not diminish, ceteris paribus, if the correction coefficient equals 1.16 (see Table 1).

Table 1. Estimates of the Increase in the Estimated Cost of Construction and Installation and Installation Work in Technical Retooling and Reconstruction

Cost per ruble's worth of construction and installation work in new construction -- c (in rubles)	Coefficients of increase in costs in technical retooling and reconstruction in comparison with new construction					
	1.10	1.15	1.20	1.25	1.30	1.35
0.60	1.06	1.09	1.12	1.15	1.18	1.21
0.70	1.07	1.10	1.14	1.18	1.21	1.25
0.80	1.08	1.12	1.16	1.20	1.24	1.28
0.90	1.09	1.14	1.18	1.23	1.27	1.32

It is expedient to use these coefficients for construction projects built to individual specifications. But in the case of those that are based on standard designs (for example, individual enterprises in the construction materials industry, in light industry and the food industry, elevators, warehouses, vegetable storage facilities, etc.), it makes sense to develop standard designs and to determine the estimated cost of reconstructing these facilities through direct calculations without resorting to correction coefficients.

The expanded scale of rural construction will also lead to an increase in the net cost of construction and installation work. Thus in 1980, cost per ruble's worth of work performed by construction organizations belonging to the USSR Ministry of Rural Construction was 13.6 percent higher than the national average. And this despite the fact that over 40 percent of their capacities were diverted to work in nonagricultural branches and in the urban economy.\*

As a result of these and other objective factors, the growth of the net cost of construction and installation work can be offset by the lowering of net cost through the use of available resources (potential). Numerous reserves for cutting construction costs can be classified into large groups.\*\* They include the improvement of the organization of production and the structure of production of construction materials according to type, assortment and dimensions; and the introduction of more economical types of materials and components and resource-saving technologies for producing them.

Enterprises belonging to the USSR Ministry of the Construction Materials Industry should redefine the mix of various brands of cement (should increase the share of brands 200 and 300 of blast-furnace slag cement, to increase the total number of brand 300 cements to 23 percent, etc.), which will permit the annual reduction of the expenditure of cement in construction by 200-220 thousand tons; curbing of the expenditure of fuel required to produce it by 500-600 thousand tons of reference fuel; the acceleration of the introduction of the introduction of the "dry" method of producing cement in place of the "wet" method (approximately 15 percent of cement production today is by the "dry" method), of low-temperature solar technology, of the mechanical dessication of slag; and the increased production of cement from granulated blast-furnace slag (this method is 2-3 times more efficient than the production of cement from limestone, clay or marl). A major effect can also be produced by the use of gypsum-cardboard sheets as industrial partitions.

The share of cavity brick must also be increased in overall brick production. The country presently produces approximately 30 billion bricks a year, of which cavity bricks comprise only 10 percent whereas in Western Europe they comprise up to 80 percent of total brick production. The recycling of materials, especially metals, produces a major effect in construction. For example, reinforced concrete plants in Moscow have installed machinery

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\*SOTSIALISTICHESKAYA INDUSTRIYA, 9 April 1982.

\*\*See: I. N. Dmitriyev, "Economizing Materials in Construction," EKONOMICHESKAYA GAZETA, No 8, 1982; Yu. M. Vinogradov, "Make Economical Use of Material Resources," EKONOMIKA STROITEL'STVA, No 5, 1982; A. A. Borova, "Scientific and Technical Progress in Capital Construction," EKONOMIKA STROITEL'STVA, No 6, 1982.

for crushing old concrete and for extracting reinforcing steel from it. The result of such a recycling effort is not only that scarce reinforcing steel is used more than one but that thousands of cubic meters of gravel are also produced in the process.

Ferrous and nonferrous metallurgy enterprises should improve the structure and mix of metal products supplied to construction. At the present time, of all the metal shapes and sheet metal used in capital construction, only 20-23 percent are higher-strength or high-strength steel. As a result of the need to replace rolled sections, the overexpenditure of metal by construction organizations belonging to the USSR Ministry of Construction in 1981 was 44,000 tons and in the USSR Ministry of Construction of Heavy Industry Enterprises -- 42,000 tons. The share of higher-strength steel in the overall production of reinforcing metal is insufficient. A considerable percentage of the construction materials is produced by small subsidiary subdivisions of construction organizations whose production costs are higher than those at large, highly mechanized enterprises.

The improved supply of contractor organizations with construction materials (improvements in norming, organization and methods of delivery) is also a reserve for cutting costs. According to the decree of the CPSU Central Committee and the USSR Council of Ministers on improving the economic mechanism, construction projects included in the state plan for capital construction must be converted to integrated supply through territorial material-technical supply organs based on orders submitted by construction and installation organizations in accordance with their requirement which is specified in designs and estimates. This method is substantially more effective than the practice of basing the supply of materials to construction organizations based on their normative expenditure per million rubles' worth of construction and installation work. Moreover, it will have a real impact on reducing expenditures of materials if the latter are allocated to construction organizations (contract brigades) on the basis of ration cards within the general limit indicated in the plan for a given construction project.

Every construction ministry has its own reinforced concrete production facilities. Many construction organizations have a considerable number of intermediate depots and warehouses. The result is irrational shipping, higher shipping costs and possible losses in the shipping process. Thus, shipping costs are 14.4 percent of the cost of cements; 30.1 percent of the cost of building materials; and over 70 percent of the cost of sand, gravel and other nonmetalliferous materials, while the average distance building materials were shipped in 1979 was 751 kilometers and the distance for prefabricated reinforced concrete components was 727 kilometers.\* The transfer by some enterprises by construction ministries to the USSR Construction Materials Industry, the reduction in the number of small transportation depots and warehouses and the practice of supplying construction organizations

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\*See: P. D. Podshivalenko, "Ways of Cutting Construction Costs," VOPROSY EKONOMIKI, No 1, 1981, pp 27-28.

construction organizations through territorial organs of USSR Gosstnab will make provide the potential for reducing material expenditures in construction (per unit of work).

The improvement of the forms and methods of organizing construction, the introduction of new, effective techniques and technologies, the raising of the level of mechanization of labor, and the strengthening of technological and production discipline play no small part in the effort to cut costs. Experience shows that construction organizations employing new and effective technological methods and working on the basis of plans for organizing and performing work have smaller material and labor inputs per unit of work.

The complex-block method of construction in Western Siberia clearly illustrates the possibility of reducing net cost through these factors. In particular, while oil pumping stations in Western Siberia were previously built according to the conventional method (i. e., the station was initially built from brick and reinforced concrete components after which the pumping equipment was installed), a new, technically more progressive method is used today. Essentially, this means that oil pumping stations are produced at the factory in the form of "block-boxes" which are delivered to the building site for assembly. Using this method, the comparable volume of construction and installation work on the Popovka pumping stations with a capacity of 12.5 million tons a year on the Nizhnevartovsk-Kurgan-Kuybyshev oil pipeline decreased from 2370 thousand rubles to 1169 thousand; net cost declined from 2236 thousand to 1099 thousand rubles; and construction time was cut from 22 to 9 months.\* Thus, the construction organization now receives 37,000 rubles more for 22 months of work.

The optimization of research and design work is one more group of reserves for cutting costs. Project designs predetermine the basic part of the overall saving of material (and labor) resources. The need for construction materials used in construction projects depends in large measure on the quality of the project planners' work and on the degree of progressiveness of design decisions. However, the dimensions and safety margin of buildings and structures specified in designs are frequently significantly greater than required for a given type of production and its normal functioning. The result is the higher material-intensiveness of buildings and structures.

Calculations have shown that the differentiation of the safety margin of buildings and the expenditure of materials used in their construction depending on their future use; the better norming of the expenditure of steel components with due regard to possible plastic deformations, stability and strength of metal under the concrete conditions of construction projects and their location in various climatic and seismic zones of the nation; and the introduction of advances in the calculation and design of reinforced concrete components will make it possible to conserve at least 1.9 million tons of metal and over 2.5 million tons of cement calculated in terms of the volume

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\*Yu. Batalin, "The Complex-Block Method of Construction," VOPROSY EKONOMIKI, No 8, 1980, pp 16-17.

of construction in 1985. Valuable in this regard is the initiative of the "Gidroproyekt" Institute im. S. Ya. Zhuk in lowering the estimated cost of construction projects. Its collective pledged to reduce the expenditure of cement on hydraulic construction projects planned by it by 370,000 tons and to reduce the expenditure of rolled metals by 110,000 tons under the 11th Five-Year Plan.

A substantial part in reducing construction costs is played by the observance of economically rational correlations between the improvement of the consumer qualities of construction machinery and mechanisms and the rise of wholesale prices on them, by the allocation of machinery to construction organizations in strict accordance with their need for them in order to perform the planned volume of work with due regard to their sufficient utilization; by the rational distribution of mechanisms among various building sites; the rebasing of these mechanisms; by the improved repair and maintenance of construction equipment, etc. And finally, the improvement of the system of indicators used in planning and evaluating the performance of contractor organizations; the development of cost accounting in construction; the economic stimulation of the lowering of material and labor inputs; and the development of the initiative of labor collectives in conserving resources are also of great importance.

Since 1983, five-year and one-year plans of construction ministries and organizations have called for the ratifications of the net cost targets of construction and installation targets and for the ratification of limits (maximum levels) of material expenditures (in money terms) within these targets per ruble of work. This will make it possible to influence the lowering of expenditures in construction more actively and to increase profit on this basis.

The experience of the LiSSR Ministry of Construction has shown that the new methods of planning and economic stimulation, in particular, the practice of settling accounts for finished projects; the introduction of elements of branch cost accounting based on the normative distribution of profit; and the planning and evaluation of labor productivity based on normative conditionally net output also contributed to the lowering of the net cost of construction and installation work and to the growth of profits. As a result, expenditures per ruble's worth of work performed declined from 97.6 kopecks in 1980 to 96.8 kopecks in 1981. In our opinion, it is possible to exert a greater degree of influence on the lowering of the net cost of construction and installation work by using the "normative net output" indicator instead of the "normative conditionally net output" indicator to plan the wage fund and to monitor its expenditure.

Since 1981, personnel of enterprises (organizations) in all branches of the national economy (including construction) have received bonuses for economizing material resources (for reducing actual expenditures compared with technically substantiated norms). The value of economized diesel fuel (up to 35 percent) and electric power (up to 75 percent), the value of economized construction materials according to estimated prices (up to 60 percent) and the preservation of the integrity of components and parts -- up to 0.4 percent of the value of these components and parts based on estimated prices

in the performance of work by construction and installation organizations can be expended on such bonuses.\* Bonuses are included in the net cost of construction and installation work. Since part of the saving of material resources is used to pay bonuses, part of this saving also leads to the lowering of the net cost of construction and installation work.

In analyzing factors underlying change in profit, it is necessary to consider the fact that the balance sheet profit of contractor organizations is calculated on the basis of profit from the sale of commercial construction output. In turn, profit from the performance of work is determined as follows:

$$P = S_b + S_e - S_t,$$

where  $S_b$  is the saving from the lowering of the net cost of construction and installation work and planned accumulations in production in process at the beginning of the year;

$S_e$  is the saving from the lowering of the net cost of construction and installation work and planned accumulations in production in process at the end of the year; and

$S_t$  is the given saving for the total volume of work performed during the year.

Accordingly, the magnitude and dynamics of the saving in the overall volume of construction work performed and of unrealized profit influence the magnitude and dynamics of profit from the acceptance of work by the client.

Analysis of the data of construction organizations, whose activity for a number of years has been evaluated according to the activation of production capacities and facilities, to commercial construction output, to the growth of labor productivity and balance sheet profit, has shown that the new indicators prompted them to increase the volume of commercial construction output through the relative reduction of the volume of construction in progress and thereby increase the volume of profit from the performance of work relative to savings on work performed for the year (see Table 2).

However in addition to this positive factor, some construction organizations also use another way of increasing profits from the performance of work by overstating the net cost of construction and installation work in progress in order to correspondingly reduce the net cost of work on projects turned over to the client and to increase the sum of profits from turning over projects in the given year.

As Table 3 shows, this results in a paradoxical picture: in the construction process, expenditures on the construction project exceed the cost of the work performed; however when the project is turned over to the client, they are less than its cost. It is obviously necessary to organize the proper

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\*Bonuses should be awarded only in organizations and on building sites that have properly ratified production norms governing the expenditure of construction materials and that have organized appropriate procedures for expending supplies and components. At the same time, work involving the given supplies and components must be carried out in accordance with technical specifications and construction norms and rules.

accounting not only of the net cost of work performed in the course of the year but also to organize the accounting of construction work in progress and of construction and installation work at projects that have been turned over to the client.

Table 2. Relative Cost of Work of Work Turned Over to Client and Profits of the BSSR Ministry of Industrial Construction and the LiSSR Ministry of Construction

Year	BSSR Ministry of Industrial Construction		LiSSR Ministry of Construction	
	cost of work turned over to client (in % of cost of work performed for year)	profit from work turned over to client (in % of saving in total volume of work performed for year)	cost of work turned over to client (in % of cost of work performed for year)	profit from work turned over to client (in % of saving in total volume of work performed for year)
1975	88.8	92.0	96.7	91.4
1976	89.8	86.9	90.0	92.6
1977	90.0	88.8	107.5	115.2
1978	96.2	102.3	97.2	112.4
1979	95.9	108.8	98.6	213.4
1980	100.4	115.6	104.9	157.4
1981	96.9	98.4	99.3	79.0

Note: The BSSR Ministry of Industrial Construction was converted to the system which evaluated performance on the basis of commercial construction output starting in 1975; the LiSSR Ministry of Construction was converted in 1977.

In order to determine the reserves for reducing the net cost and for increasing profit, it is necessary to have: a uniform classification of factors underlying change in net cost and profit and reserves for lowering net cost; an accurate count of expenditures and losses, and uniform methods for the factor analysis of changes in net cost and profit and the regular performance of such analysis. Construction ministries and project-planning and other organizations subordinate to them conduct annual factor analysis of changes in net cost and profit based on annual report data of construction organizations and explanatory notes appended to them.

However, as yet there is no standard classification of factors underlying change in the enterprise cost of production and profits and a uniform set of methods for their factor analysis. According to the data of annual reports, it is possible to determine the influence of only some of the factors. Data on the influence of certain others are included in explanatory notes appended to the annual reports, but not all construction organizations compile them with the degree of completeness required for the analysis. As a result, the summary data of this analysis are occasionally not sufficiently complete for construction ministries.

Table 3. Relative Profits from Turning Work Over to Client and the Saving in Construction Work in Process in the USSR Ministry of Construction and the LiSSR Ministry of Construction (in % of saving in work completed for year)

Ministry	Saving (+) or loss (-) in construction work in progress at beginning of year	Saving in work performed for year	Saving (+) or loss (-) in construction work in progress at end of year	Profit from work turned over to client (col.2 + col. 3 - col. 4)
1	2	3	4	5
USSR Min. of Con.				
1980	-39.7	100	-19	79.3
1981	-44.2	100	-27.4	83.2
LiSSR Min. of Con.				
1980	11.8	100	-45.5	157.3
1981	-34.9	100	-13.9	79.0

Consequently, in order to ascertain the reasons (factors) underlying changes in net cost and profit, reserves for reducing net cost and increasing profit; to evaluate the activity of construction organizations and the stimulation of personnel for lowering net cost and for increasing profit as a result of factors depending on the activity of given organizations, there must be acceptable methods for effecting the factor analysis of changes in these indicators. Such methods must be uniform for all elements of construction. There must also be the uniform classification of factors. With the transition from one set of elements to another, larger set of elements, the complement of factors may increase (for example, at the ministry level the influence of such a factor as change in the share of work in the northern regions of the country is determined). It is important to assign a multiple-aspect character to the methods, i. e., to group individual factors applicable to various aspects of the analysis in such a way as to prevent double counting. The fulfillment of these two demands makes it possible to compare the influence of individual factors and reserves for individual construction subdivisions at every level and also to determine the factors and reserves for various ministries, republics and branches by summing up the data of individual construction organizations.

It is also important that the determination of the influence of factors on changes in net cost and profit and reserves for increasing the latter be maximally oriented toward the use of the annual reports of construction organizations (annual reports in turn should contain the maximum number of indicators required for factor analysis and for determining the reserves for lowering the enterprise cost of production and for increasing profit). Factors must be correctly distributed between two groups: those that depend and those that do not depend on the performance of contractor organizations, to ascertain the factors that can be considered for lowering net cost (increasing profit) to a given degree and the correlations between magnitudes of factors and reserves. Thus if losses stemming from payment of wages to workers for idle time for entire shifts and within shifts comprised 600 thousand rubles for a ministry in the base year and 650 thousand rubles in the following year, the prime cost of construction work resulting from the influence of these factors increased by 50 thousand while the reserve for increasing expenditures was 650 thousand rubles.

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## CONSTRUCTION PLANNING AND ECONOMICS

### UZBEK GOSSNAB SEEKS TO IMPROVE SUPPLY OF CONSTRUCTION SITES

Tashkent EKONOMIKA I ZHIZN' in Russian No 2, Feb 83 pp 26-27

[Article by R. Mulyukov, deputy director of the RVTs of the Gossnab, candidate of economic sciences, and R. Skyadnev, docent of the Tashkent Institute of the National Economy, candidate of economic sciences: "Improving Supply for Construction Sites"]

[Text] It was noted at the November (1982) Plenum of the CPSU Central Committee that immense amounts of money are being used for the development of the economy, the creation of new capacities, and housing and cultural-domestic construction. But still there are many problems in the sphere of capital construction.

There are many complaints, in particular, about the material and technical supply for construction sites and the fact that they are not promptly provided with the necessary equipment.

In the two articles published below the authors analyze these problems and also suggest a number of variants for solving them.

It seems to us that they deserve attention. And the editorial staff asks all interested specialists to express their opinions on the pages of the magazine.

Intensification of production and acceleration of the turnover of circulating capital depend largely on how optimal the supplies of material resources in the national economy are. And therefore one cannot regard it as normal when the sum of circulating capital in stocks of material values in our country has doubled during the past decade while the production of the gross social product has increased 1.85-fold.

There is the indicator of stock reserves, which reflect the ratio between the amount of stocks of material resources and the product that is produced. Thus in the Uzbek SSR as a whole it increased from 1970 through 1980 from 28.7 to 31 percent. And if one considers it in individual branches, it becomes clear

that this increase took place mainly because of increased stock reserves in capital construction--from 11.7 to 36.9 percent, and in agriculture--from 7.4 to 15.9 percent. In industry, conversely, it dropped appreciably--from 23.8 to 17.1 percent.

The growth of stock reserves in agriculture and construction shows the shortcomings in the control of the process of movement of material resources and in the formation of stocks of them. But the main conclusion that should be drawn from the figures presented above is that the structure of the stocks of material resources is not uniform and therefore their circulation is retarded in branches of production in the republic and in the country as a whole. Stocks of individual kinds of material resources in certain national economic subdivisions are not applied or are utilized only partially, and in others there is idle time because of a lack of these materials. For this reason they are forced to replace materials, which has a negative effect on the quality and the price of the products; and they conduct supply operations that are not planned and are not always legal, which also increases production outlays.

On the other hand, products for production and technical purposes that are unutilized and remain passively in the warehouse reduce the effectiveness of public production since resources expended on their output cannot be embodied in the final product. We have calculated that machine building enterprises of the republic alone, because of incorrect formation of production stocks, sustain losses of about 2.5 million rubles a year.

Under these conditions it becomes necessary to redistribute material resources, to physically transfer them from one project to another. Thus under the 10th Five-Year Plan, the Uzbek SSR Gossnab, by finding above-normative, surplus and unutilized material resources, brought a total of more than 500 million rubles' worth of commodity and material values into economic circulation, including 115,000 tons of rolled ferrous metals, 4,180 tons of steel pipes, 3,500 tons of soda products, more than a million bearings, and many other things.

The development of a warehouse form of supply can actively counteract this process of accumulation of above-normative stocks. This makes it possible to organize centralized delivery of materials to the consumers from Gossnab warehouses within small time intervals according to a mutually agreed-upon schedule in sufficiently small batches (which does not exist with car delivery) and in the assortment necessary for industrial consumption. This form is also convenient because more favorable conditions are created for the consumer enterprises to have continuous supply of raw and processed materials. The new provisions concerning the delivery of products for production and technical purposes place stricter requirements on the enterprises that send these products to intermediate organizations of the USSR Gossnab and Goskomsel'khoshtekhnika. In the event of a violation of the delivery conditions (delay, incomplete delivery) the former pay a fine in an amount of 1.5 times that which they pay for failure to make deliveries directly to the consumer enterprises.

Yet warehouse provision of material resources is not always economical for many consumer enterprises, especially for those which have railroad sidings and the opportunity to obtain material resources through transit directly from the

producer enterprises. For with the transit form of movement of material resources expenditures on the delivery of a unit of product are less than with warehouse supply.

Therefore we are far from the idea that one should exclude the transit form of supply and provide the consumers only through warehouses. And such a statement of the problem is unrealistic since, among other things, we do not have the necessary material base, transportation and labor force to implement it. Efficiently combining these forms is a different matter.

To do this it is suggested that research be conducted to determine the forms of supply for specific consumers for various kinds of products and that a general plan for supply be developed for the Uzbek SSR. It presupposes the creation of a network of interrayon and interoblast batching enterprises for deliveries of various kinds of material resources. In our opinion, the development of the general plan should be the responsibility of the USSR Gosplan on the basis of a stage-by-stage elimination of departmental bases and warehouses of various ministries and departments. In addition to this it would be expedient to conduct work for specialization and concentration of supply and sales agencies in the system of the Uzbek SSR Gosplan.

The development and implementation of a general plan for supply will make it possible to increase socially productive labor. Thus just by reducing the stocks of material resources in the national economy more than 760 million rubles' worth of products will be brought into the national economy under the condition that the relative increase in stocks will be equal to a similar indicator for production. And this might be even more since, we repeat, the relative increase in the stocks of resources theoretically should be somewhat less than the increase in production.

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## CONSTRUCTION PLANNING AND ECONOMICS

### INSTITUTE DRAFTING CONSTRUCTION INDUSTRY SUPPLY MODEL

Moscow MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE in Russian No 4, Apr 83, pp 54-57

[Article by O. Dukarskiy, laboratory chief in the All-Union "Orgenergostroy" Institute: "Providing for Construction Sites at a Steady Pace"]

Improving the level of the engineering preparations and of providing complete production and technology for capital construction is one of the most important goals that were set by the resolutions of the 26th CPSU Congress. Therefore, improving the organization of administrations that supply materials, technology and complete equipment and their links with the engineering preparations for construction production has great importance.

Work is being done at our institute on a system concept for the "capital construction" sector and on a study of the flows of labor and material resources which simulate the construction production process and also the structure of the organizations that promotes a decrease in the destabilization of these flows. The conclusions that are given below are either the results of an analysis of the models or a logical result of the transfer of the results of the simulation into practice when working out long range plans for the development of the material and technical base of capital construction.

A conception of the system as an accumulating type lay as the basis for the system concept of the sector and for constructing the appropriate cybernetic model. In construction production the site itself is spatially fixed while the equipment and articles for work and the work force are movable resources that are fixed to the site and in accordance with design and estimate documentation are transformed into construction commodity production. These products go through stages beforehand which are called incomplete construction. The well-known scheme for transforming various types of resources and regulating information--design and estimate documentation being considered such information--into amounts of incomplete construction can be represented as a process of accumulating them in accordance with established rules. The process of accumulation can be considered complete if all of the regulating resources are implemented after which the amounts of incomplete construction are transferred to fixed assets.

During the process of managing construction production primary emphasis must be placed on providing the sites with all types of resources on time in the needed proportion and complete equipment. It is precisely this that makes it possible to objectively forecast the pace of construction. The fact is that at the present

stage in the theory and practice of managing with the aid of computer technology it is not expedient for the highest level of management to intervene in a normal technological process which is provided with the necessary resources. such a guardianship does not promote initiative on the part of the engineering and technical personnel who directly control the pace of construction.

This is supported by the research of other scientific and research institutions in USSR Gosstroy and Ukrainian SSR Gosstroy. It was proved that non-production expenditures for engineering and technical workers in construction and installation organizations amount to 30 to 50 percent of the working time. This time is primarily lost in providing sites with materials, machines, mechanisms and transport.

The fulfillment by engineering and technical workers of the supply function which they are not equipped to do, rarely helps to correct the deficiencies in planning and distributing material and technical resources. Along with this it takes away much time from them which is needed to organize the work of the crews, to adopt advanced technology and to improve the quality of work. It is precisely these questions that should be the center of attention of the engineering and technical workers in construction and installation organizations and it is precisely these that require the creative initiative of the superintendent.

It can be proved that large potentials for intensively developing construction production are contained in this. But regular and sufficient attention (in length of time) to intensifying construction is possible only when all types of resources are provided on time. This is the fundamental goal of workers in the management system, including services that provide materials and technology and complete equipment.

When representing the system for managing construction in the form of interrelated elements of supplied and accumulated resources it is very important to correctly determine the relationship between the flows of these resources. For example, manpower at the site must correspond to the mechanized services in an arrangement that has been established beforehand and these, in turn to the materials, equipment and complete technology. These proportions are specified by the design and estimate documentation and the technology and within small limits can be changed during the process of accumulation. however, during planning they are taken to be constant. If the proportions are not observed then only that portion of the resources for which the arrangement that has been established by the plan is fulfilled are subject to accumulation and the remainder either accumulates at site warehouses (materials, components, etc.) or is lost (non-renewable resources).

The intensity of accumulating resources cannot be arbitrary. A technologically validated maximum tempo exists and the amount that it can be increased is also limited. In other words only a gradual opening of working fronts is possible which is determined by their technology.

And so substantial potentials for intensifying construction production lie in the sphere of supplying construction sites with materials, technology and complete equipment. Only proportional supplying makes sense since the failure to observe this principle leads to idle time (losses of living labor) and above normal reserves

of resources. Finally the steady arrival of materials, machines, mechanisms, manpower, etc. at the construction site is necessary because no type of crash deliveries can produce a positive result since accumulating resources at speeds that exceed that which is technologically sound is impossible.

One of the simulated organizations based on the accumulation type system is an administration that provides complete production technology. It reduces the number of contacts between suppliers and the construction site and increases the level of specialization. Receiving materials and components, the administration further acts as an assembly and complete equipping enterprise and sends the complete set of equipment to the site through one resource channel. When doing this its primary function becomes making deliveries at different times, feeding complete components and materials on time in accordance with the optimum amounts of types of resources or complete sets of equipment.

The administration for completely providing production technology receives valid orders for material resources from construction and installation organizations, checks the relationship between the quarterly orders with existing reserves, determines the forms of supply together with enterprises in the construction industry and develops complete production equipping bases and warehouse facilities. The administration completely provides the sites with prefabricated components and parts, delivers materials, efficiently uses both the transit and warehouse forms of delivery, improves the factory preparedness of components and parts and prepares materials for their use at the construction site.

The cybernetic model for the sector based on a morphological, functional and informational description made it possible to uncover the interrelationships between the accumulating (construction sites) and executing elements (construction and installation organizations, administrations that completely provide production technology and others) that produce the flows of resources. When this was done the change in their destabilization (on the basis of retrospective data) on the one hand and the increase in the time delays for the flows, on the other, was examined.

Material resources may be divided into two types. Grouped with the first are semifinished products, building materials and components with an indeterminate long storage time; in the second are those with limited and possibly even short storage times (for example, cement). For this type of resources a maximum length of storage is often established during the course of which materials gradually spoil and become unusable.

It was primarily the scheme for supplying resources with an indeterminate length of storage that underwent an analysis at our institute. The possibility of construction and installation organizations directly implementing the assets, that is, sites being provided for by territorial agencies in USSR Gosstnab, and also the formation of administrations for completely providing production technology was examined. In the latter case, as is well known, departments and bureaus for supplying materials and technology are being abolished in construction and installation organizations but a "trans-shipping" and processing center in the form of administrations is appearing. Not all of their activities in practice by far have received positive evaluations. Therefore, the question of the limits of the applicability of the organizational types for providing material and technical resources and complete equipment to

construction sites in the form of administrations for providing complete production technology has great significance.

Evaluating the activity of such an administration in a region of concentrated construction can be done on the basis of its profitability or by its effect on the increase in labor productivity. However, in our opinion, the most objective evaluation is by the reduction in idle time during shifts for labor and mechanical resources that occur due to an improvement in the completeness of equipment and in providing material and technical resources. If one keeps in mind that the capacity of construction and installation organizations depends directly on the coefficient of losses of labor and machine time no less than 50 percent of which occurs, as a rule, due to deficiencies in material and technical supplies and in the completeness of equipment, then the importance of this indicator is obvious.

Research on construction and installation organizations in the USSR Ministry of Energy has shown that idle time goes up with an increase in the number of projects that are being erected by a given organization, in the annual amount of construction and installation work and in the relative proportion in these amounts of installed reinforced concrete and metal components (we will designate these amounts with a G and R) in this amount. This fact was also the basis for determining the effectiveness of forming administrations for completely providing production technology in a specific region.

We are reminded that the "Temporary Methodical Recommendations for Determining and Planning the Development of the Production Capacities of Construction and Installation Organizations" suggests that the average annual production capacity be determined by the actual amount of construction and installation work that an association (trust) completes with its own forces during the base year, by the coefficients of utilization for the machines and labor resources that are at the disposal of the organizations (obtained on the basis of the given forms for statistical accounts) and the portion of work that is done by mechanized means. The relationship between the sum of the amounts that were actually completed by all the organizations in the region during the base year and the sum of the corresponding capacities is called the coefficient of use of the production capacities of the organizations in a given region.

The data collected on the losses of machine and labor resources due to the incompleteness of providing sites with materials and technology has shown that starting with a certain amount of construction and installation work and with a number of projects in the region no less than 15, the formation of administrations for completely providing production technology can provide a reduction in the loss of machine and worker time for whole shifts and during shifts. Thus, the coefficients of use of machines and labor resources increase. One can roughly consider that this improvement occurs due to an increase in the conditional regional coefficients of use of resources for a type of capacity (we will designate them  $r_M$  and  $r_T$ ), which leads to an increase in the production capacities of the construction and installation organizations that are doing work in the given region.

In order to determine the coefficient  $r_M$  it is suggested that the following formula be used which was derived by means of refining the statistical data:

$$r_M = 0.5 (G^{0.081} + R^{0.043}) H^{0.018} e^{0.0009 \cdot n}.$$

An analagous formula (only with different constants) was derived for  $r_T$  as well. The amount of work done in a region (H) should be no less than 20 million rubles, the number of projects no less than 15 and the relative proportion of installed reinforced concrete and metal components no less than 0.05.

The number of projects is calculated from the following considerations. The largest in the region is selected and all the projects whose volumes of work amount to no less than 6.6 percent of the amount of work at the largest. Their total number is the first component for determining the total number of projects. All the volumes of work at the remaining small sites are summarized and the result is divided by the amount of work at the largest and multiplied by 15, that is, all the small ones are set against the projects whose volumes of work are no less than 6.6 percent of the amount of work at the largest. Thus a second component is derived while the total sum also gives the number of projects (n) used in the above given formula.

Further, the new coefficient for the use of the production capacity of the organizations in the region which was caused by the formation of an administration for providing complete production technology is calculated on the basis of  $r_M$ ,  $r_T$  and the coefficient that determines the portion of work that is done by mechanized means. The difference between the new (calculated) coefficient for the use of capacities and that which was achieved during the base year, which is multiplied by the capacity of the organizations during the base year, will give the increase in the capacities of the organizations in the given region which is possible to obtain after forming the administration. And then the effectiveness of its organization will be determined by the difference between the increase in production capacities and the additional expenditures needed to create the administration's production base.

The next stage is the adoption of a resolution concerning the jurisdiction over the administrations for providing complete production technology by the appropriate sector or USSR Gosstab. In a majority of regions of the country several ministries are simultaneously doing capital construction work. Therefore, the sole possibility for meeting the orders of all the construction and installation organizations on a parity basis is to transfer the administrations to the jurisdiction of USSR Gosstab by means of limits on the work of the ministries whose interests are affected. Under these conditions an economic incentive for the activities of such subdivisions should be made while providing the client organizations with complete resources on time.

In order to fulfill their functions administrations that completely provide production technology will have to solve a number of problems including minimizing transportation expenses when delivering materials and components, distributing limited material resources, organizing the combined activities of suppliers and consumers, and distributing materials that cannot be warehoused.

But the most important question that requires a fundamental improvement in providing materials, technology and complete equipment is discovering demands for material and forming complete sets of equipment on the basis of design and estimate documentation in time. At the present time, in order that the most modern structural approaches are put into the designs, design work is done parallel to the construction work while staying ahead by six to eight months. Therefore, calculations of the demand

for materials that are to be transferred for manufacturing construction components and parts is made more difficult and even more so when calculating the required ratio in forming complete sets of equipment. For example, the majority of construction organizations have above normal reserves of rolled metal but they are not being used because they are incompatible from the point of view of the characteristics and brands that are needed by the consumers.

In our opinion the most long-range technology along these lines is to obtain design and estimate documentation, in which assembly schemes and specifications are presented, from the design institute on computer printouts in such a form that would make it possible to select the needed resources and appropriate set of equipment for the given collection of work. Such a scheme was proposed and tested in our institute. It makes it possible to form annual orders for compiling the sector balance of production and demand for building components, to calculate the demand for materials and to draw up requested specifications for the complete sets of technology for placing orders at plants in the construction industry.

Thus, the complete cycle of providing materials and technology to construction sites must include design work, preparing for construction production (in particular solving the problems of providing complete equipment by EVM based on the design and estimate documentation) and the procedures for delivering complete sets of equipment on time. Such a scheme requires the obligatory presence of an administration for providing complete production technology, which has in its makeup an EVM computer department, in territories where there is a concentration of construction. In this case, the computer printouts with designs and estimates that are received from the design institute can be used to directly determine the demand for materials and components on the basis of the list of work, which together with the computer printouts should be transmitted to the administration.

At the first stage another more realistic scheme is possible in which all types of demands are determined at the computer center of the corresponding sector and the results of the calculations are transmitted to the administration for providing complete production technology. In both cases the route from the design institute to the agencies for material and technical supply is sharply reduced.

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## AGRICULTURAL CONSTRUCTION

### LAG IN KAZAKH RURAL CONSTRUCTION DEPLORED

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 3, Mar 83 pp 62-66

[Article by A. Korikov: "Last Year's Lessons"]

[Text] In the unified system of measures aimed at integrated implementation of the Food Program, a central role is assigned to capital construction. It is necessary to modernize, expand, and strengthen the material-technical base of the agroindustrial complex as well as speed up the construction of dwellings and farm structures, child care facilities, schools, clubs, libraries, cultural and service facilities, trade and public dining enterprises, and health care facilities on the kolkhozes and sovkhoses, and also main-connecting and on-farm roads.

The state is allocating enormous material resources to accomplish these tasks. In 1983 alone, our republic's contract construction organizations are to complete 4.3 billion rubles' worth of construction-installation work--3.7 percent more than in 1982. The builders are to construct 2.7 million square meters of housing space in rural areas--about one-half of all the housing to go into operation in Kazakhstan.

Substantial amounts of construction-installation work this year are to be completed on start-up projects which will make it possible to obtain the greatest increase in food products in a short time.

In order to cope successfully with rising volumes of rural construction, it is essential to speed up the development and consolidation of the production bases of the contracting organizations and to put new construction materials industry capacity into production. Some 196.8 million rubles of capital investment are being put into strengthening the builders' industrial rear echelon this year.

It was pointed out at the November 1982 CPSU Central Committee Plenum that one of the most vital tasks in capital construction is the effective utilization of allocated funds.

How well are rural builders handling the tasks of the Food Program? How well did they perform last year?

We will attempt to answer these questions with examples of their activities in Taldy-Kurgan Oblast.

The main general contracting organizations working on the Food Program in that region are Taldykurgansel'stroy Trust No 23 of the republic's Ministry of Rural Construction, Taldykurganvodstroy Trust and Taldykurgansovkhozstroy Trust of the Main Administration for the Construction of Rice Sovkhozes, and Taldykurganremvodstroy Trust of the Ministry of Land Reclamation and Water Management. The client is the capital construction administration of the oblast agricultural administration.

In 1982 the Taldykurganians stepped up their efforts on a number of agroindustrial projects. As a result, they managed to complete a year's plan for the commissioning of livestock complexes accommodating 2,800 head of large-horned cattle and to build sheep-raising facilities accommodating 77,800 head (double what the plan called for). A large-panel residential construction plant with a capacity of 50,000 cubic meters of fully assembled components and parts went into production. In all, fixed capital worth 16.1 million rubles more than in 1981 was commissioned.

With respect to the remaining points in the state plan of capital construction, the Taldykurganians did not achieve planned targets. The capital spending target was only 97.4 percent met: 96 percent for construction-installation work, 75 percent with respect to volume of commercial construction product, 86 percent with respect to putting irrigated land into production, and 85.4 percent for housing construction (only two of the 12 rural rayons-- Alakul'skiy and Karatal'skiy--completed the plan). Rural areas failed to receive 23,700 square meters of housing.

General contracting trusts Taldykurgansovkhozstroy and Taldykurganvodstroy completed the irrigated lands commissioning plan by only 86 percent. Although the builders of Taldykurgansel'stroy Trust No 23 completed overall state capital investment quotas by 110 percent, they completed only 51.3 percent of the plan stipulating the volume of commercial construction product. Out of 13 mobile-mechanized columns which were assigned planned volumes with regard to this indicator, only one met the target.

In short, the oblast ended the construction year with the lowest indicators in the past 10 years. Such are the results.

Why have the subcontracting organizations performed so poorly?

#### The Project's "Diseases"

Poor planning discipline. It is especially apparent in the lower-level links. In Taldykurgansel'stroy Trust No 23, for example, the brigades have yet to become the object of planning. In 1982, as a result, 74 of its brigades did not have a yearly workload plan. Even the mobile mechanized columns, in fact, lacked stable yearly targets.

Plans were frequently adjusted downward, so that not a single project was built in a rhythmic manner, without the builders and their equipment being taken off newly begun projects and assigned to others.

There are other problems as well. Any economist knows that mobile mechanized columns are unprofitable if they complete less than 1 million rubles of construction-installation work in a year. But what, in fact, is happening?

Last year 18 mobile mechanized columns of Taldykurgansel'sstroy Trust No 23 completed 17.9 million rubles of capital investment. That's an average of 990,000 rubles. When you consider that overheads account for almost 25 percent of the total volume of construction-installation work completed, what we have here is not simply a case of unprofitability but a loss from the work of the construction subunits.

Consolidation of the mobile mechanized columns is a truth requiring no proof.

Of course, this problem can hardly be solved through simple arithmetical addition of volumes of construction-installation work to the yearly plans. It is necessary to take timely steps to carefully analyze the capabilities of the industrial base and the level of capacity load of the rural mobile mechanized columns on the largest projects of the agroindustrial complex, social and cultural facilities, and so on.

Unfortunately, no one in the trust and the oblast planning commission has undertaken to work through these problems, and the question of consolidating the mobile mechanized columns has hardly been raised at all.

A difficult situation developed last year on many start-up projects because of lagging finishing work. This was especially true of the construction of a 480-head cattle complex on Oktyabr'skiy Sovkhoz, a hospital in Rybach'ye, a secondary school in Sarkand, and a number of housing projects.

Did this come as a surprise to the general contractor? In all probability, no--because this "disease" is traditional for the construction projects in Taldy-Kurgan Oblast. The trouble is that no one has undertaken systematic efforts to eradicate it.

But this time life compelled the trust's management to seek radical measures. Structural changes were introduced in the system of administration: Mobile Mechanized Column No 2315, a specialized inter-rayon finishing unit, was created. But a social oversight was made in planning the creation of the new unit. The finishing brigades were made up chiefly of women having small children, a fact which was not taken into account with regard to ensuring mobility. Naturally, cadre turnover was high: over 50 percent. And what was theoretically a good undertaking proved to be a failure.

It was a bitter but useful lesson for the organizers of the construction project. This negative experience showed that it is essential to foresee the social consequences of any decision or measure that is undertaken. In this case, the situation was rectified too late, after valuable time had been lost, and on many start-up projects the loss has yet to be recovered. Only then were youth brigades set up in the finishing unit. And in order to retain their cadres they had to find funds to build dormitory housing on a share basis for workers with families.

Another indication of discipline violations in rural construction is unplanned construction. Last year, every rayon had new projects which were not registered in the title lists. They accounted for more than 4 million rubles of construction-installation work. And where did the resources come from? Just one source: projects of the agroindustrial complex. This reflects both the unprincipled position of the clients and the managers of the general contracting organizations and the inadequate control exercised by the planning and financial organs.

Another cause of poor performance in 1982 was the weakness of the client's service. Year after year it has failed to supply the builders with all the necessary project-estimate documentation. This can hardly be called normal. And how about delayed financing and deliveries of full sets of equipment? Plenty of faults here as well. Not just the contractor but the clients also are supposed to think about building up a solid normative start in accordance with long-range capital construction plans. In other words, they also are obliged to take steps to create the conditions necessary for uninterrupted work by the general contractor.

Experience has shown, unfortunately, that these are as yet merely dreams. During the first half of the year, work was delayed on almost every other project in the oblast due to the lack of project-estimate documentation and financing. Communal services projects and housing construction were especially hurt.

Take, for example, the Andreyevskiy Livestock Complex, with an estimated cost of 3 million rubles. It was a start-up project for 1982. But for some of its components--the boiler facility, the substation, and others--technical documentation was submitted very late. Financing was also delayed. As a result, this vital project of the Food Program did not go into production. A similar situation developed in the construction of the Kapal' water pipeline, the Karabulakskiy and Taldy-Kurganskiy rayon boiler facilities, and other projects. In 1982 as a whole, the capital construction administration of the oblispolkom and the capital construction administration of the oblast agricultural administration supplied only about 80 percent of the project-estimate documentation for projects of the agroindustrial complex.

The clients turned out to be totally unprepared to convert to the industrial method of housing construction. A large-panel residential construction plant with a capacity of 50,000 square meters of components went into production in September 1982. But the clients did not trouble themselves to take timely steps to accommodate standard housing projects to the new facilities. The reason was their unforgivable lack of foresight. When the plant was being built, nobody in the oblast agricultural administration's capital construction administration, or any other clients, took the slightest interest in whatever new and advanced components and structures this enterprise intended to turn out. And the enterprise, as it happened, was programmed to make not only traditional components but also the latest IIS-04 issue 7 structures. Naturally, these components were not registered in the standard housing plans. In short, the innovation was not incorporated in the standard housing plans, and the facilities that had been put into operation were never used to

complete the housing plans before the end of the year. These are the kinds of gross oversights committed by the clients last year.

A third "disease" is disruption in the supply of materials to the projects. It is true that some projects included in the state capital construction plan have started to convert to integrated material supply via USSR Gosstabs territorial organs of material-technical supply as per orders from the construction-installation organizations in accordance with their need as stipulated in the plans and estimates. So far, however, this kind of supply has not essentially gone beyond the experimental stage. These supply shortcomings hurt the rural builders of Taldy-Kurgan Oblast last year. In particular, Taldykurgansel'stroy Trust No 23 failed to receive more than 30,000 square meters of cabinet components for start-up and initiated projects. This was the reason for the failure to commission a cattle complex on Oktyabr' Sovkhoz, agricultural-vocational schools for 960 pupils in Sarkand and Aksay, a kindergarten for 280 children in Musabek, a 27-unit apartment building in Kugaly, a secondary school in Gvardeyskiy Rayon, and a number of other projects. In all, the oblast failed to receive 10,574 cubic meters of lumber and 5,600 tons of cement--one-third of the year's requirements.

Due to the cement shortage, the rural builders were unable to pour the foundations for almost half the projects in the warm season. The shortage of bricks, ferroconcrete components, asphalt concrete, lime, and gypsum also hurt.

The weakness of the general contracting organizations' own base is also a chronic disease. Why have the "rear echelons" of the construction units proved to be inadequately prepared for the new tasks? Mistakes in the technical policies of Taldykurgansel'stroy Trust No 23 and the republic's Ministry of Rural Construction have been a factor. When the trust was being set up in the 1960s, it was decided to have one big, flexible mobile mechanized column in each rayon. But no one actually undertook to consolidate the bases of these units.

Only three mobile mechanized columns got their own industrial bases provided with concrete mixing units, warehouses, cabinetry and machine shops, service and administrative quarters, and so on. The other columns got no such outfitting. Not much has changed since then. The Kazakh Ministry of Rural Construction paid most attention to the development of the main base of the construction industry of the trust located in Taldy-Kurgan. They forgot about the "boondocks." Moreover, they systematically failed to assimilate all the funds allocated to the trust to strengthen its base.

Yet the material-technical base of the subordinate units should have been beefed up at an accelerated pace, outfitting the mobile mechanized columns with up-to-date concrete mixers, tinting shops, production machinery, and stuccoing and painting shops, and building warehouses and shops and other auxiliary facilities. This would have made it possible to increase the capacity and mobility of the mechanized columns, a factor which is extremely vital for the accelerated development of the base of the agroindustrial complex as well as integrated development of the rural infrastructure.

But it is more than just a matter of the weakness of the industrial base. It is not properly oriented toward the handling of new construction tasks on the basis of industrialization of construction. The most urgent problem today is cadres. But one out of every three general contracting brigades in the trust was employed laying bricks. Naturally, the work is going very slowly, with much manual labor.

True, the trust is trying to open up the bottlenecks. Consider, for example, the large-panel housing construction plant that was put into production, as has been mentioned. The builders are hoping to bring it up to projected capacity this year and thus lay the groundwork for industrialized large-panel housing construction. But this only marks the start of eliminating all the shortcomings. And, again, gross mistakes were committed.

The new enterprise was not provided with simultaneous development of auxiliary facilities such as a base for the production and processing of inert materials and mechanization, repair, and UPTK [Administration for Industrial and Technological Unitization] bases. The central cabinetry shop and the vehicle depot have not been expanded and retooled. The facility for making sturdy ferroconcrete components has not been remodeled. In effect, the new enterprise lacks a "rear echelon." All this reflects shortcomings in the technical policies carried out by the trust and the ministry.

The situation is no better with regard to the development of the base of another major contractor--the main Administration for the Construction of Rice Sovkhozes. This is the main reason why both of its trusts--Taldykurgansovkhozstroy and Taldykurganvodstroy--are capable of completing a total of only 22 million rubles of construction-installation work per year. Considering the large amount of work involved in flooding the left-bank areas of the Tentek, Ashchilik-Ozek, and Novo-Antonov land tracts, these organizations ought to get busy and develop their own "rear echelons."

The low level of organization of labor must also be considered as one of the main reasons accounting for failure to fulfill the plan. Here is what V. G. Shumilov, leader of the integrated stonemasons brigade of Taldykurgansel'stroy Trust No 23's Mobile Mechanized Column No 2306, has to say: "I have worked in the trust since 1969. There are 14 men in the brigade. We converted to the contract system 8 years ago. Last year we built a 33-unit apartment building and three duplexes on the contract method, also the Koksuy Agricultural Technicum for 720 students. We kept to the schedule only on one project. We suffered from considerable disruptions and stoppages. What were the reasons? Well, first our colleagues failed to pour the foundations on time, then the bricks weren't delivered on schedule, then the equipment broke down, then we were taken off our own project and rushed urgently to others...

"We knew our volume of work only a month in advance. We never received bonuses on the basis of brigade cost accounting. The men were dissatisfied: three experienced stonemasons quit the brigade. Because of the disruptions and frequent stoppages we have gotten out of the habit of conserving work time and working steadily the whole shift."

A good organizer, V. G. Shumilov is undoubtedly heartsick about the job entrusted to him and has given a rather precise evaluation of the social damage done to the project by the poor organization of labor. The situation in this brigade reflects the general state of affairs in the trust. Especially with regard to the adoption of brigade cost accounting.

It turned out that almost every one of the 41 brigades working on the N. Zlobin method violated contractual terms in the course of the year. And all through the fault of the mobile mechanized column's or trust's administration. It is not surprising that the yield from this kind of adoption of brigade cost accounting was rather meager. The total reduction in calculated cost came to 7,800 rubles. Labor productivity on the main types of construction work was lower than the planned level. Thus, the actual output per worker in the first 9 months of 1982 came to 2.12 cubic meters in the installation of precast ferroconcrete, 1.43 cubic meters in bricklaying, 13.2 square meters in plastering work, and 24.8 square meters in painting. Only the installers and plasterers completed plan norms.

The builders' labor productivity was also hurt by large losses of work time. The trust's work time losses in the first 9 months of 1982 came to 59,900 man-days--16.2 percent of the time worked. Day-long stoppages totaled 519 man-days, and 2,068 man-days were lost to absenteeism (an average of 1.4 man-days per worker).

Analysis shows that the general contractor did not make good use of construction machinery and equipment. Thus, the shift coefficient was 1.44 instead of the planned 1.6 for one-scoop excavators, 1.4 versus 1.7 for bulldozers, 1.47 versus 1.7 for tower cranes, and 1.58 versus 1.6 for truck cranes. The level of readiness for all these types of equipment was actually lower than the planned level. Accordingly, normal output by the main types of construction machinery and equipment did not reach planned levels.

Poor administration of the construction process and low labor discipline, as is well-known, lead to violations of the requirements of construction technology. And this is a sure way to substandard quality and work that has to be done over. Not surprisingly, the trust had to spend 1,631 man-days to fix up substandard workmanship and do jobs over.

How would it have been possible, given this kind of organization, to put the projects into production on schedule? It is not at all surprising that in terms of the year's results the trust failed to deliver nine projects necessary to the national economy.

And so, what were the "diseases" afflicting the projects of Taldy-Kurgan Oblast in 1982? Weak plan discipline, poor performance by the main clients, lack of guaranteed deliveries of construction materials to the sites, and poor organization of labor. All of this led to ineffective utilization of capital investments allocated by the state to develop the agroindustrial complex base and build up the rural area in an integrated manner, as well as failure to fulfill the construction plan in the second year of the five-year plan.

How to do away with these shortcomings? How to raise the level of planning and administration of rural construction? There is a way: adopt the effective method used by the builders of Orel.

#### The Orel 'Continuous Method' Needed in the Countryside

A radical move--conversion to the method of integrated flow-line construction of projects of the agroindustrial complex, housing, and social-cultural, consumer, and communal service facilities under a unified client system. We are referring to the famous Orel "continuous method."

The Orel method calls for concentration of capital investment for uninterrupted planning under a single authority. The construction is also carried out by a single general contractor. Suppliers of materials, components, and technological equipment in this link-up are constant. This partnership is backed up by economic relations based on cost accounting.

Experience in using the "continuous method" shows that in a number of Kazakhstan's cities--Karaganda, Pavlodar, Alma-Ata, Shevchenko, Ural'sk, and others --when capital investments are concentrated and continuous planning is used many difficult problems in construction are resolved on a qualitatively new level.

First, it solves problems of supplying projects with timely plan and technical documentation, materials, and equipment, and putting the projects into operation rhythmically. Second, for adoption of the brigade contract method --especially the "integral process contract," which is its most progressive form--the Orel method creates favorable conditions: optimal volumes of construction-installation work are planned both for the construction units and the brigades.

Third, concentration of capital investment and continuous planning stimulate the general contractor to speed up the development of his own industrial base.

But experience in the use of the Orel "continuous method" in rural construction is lacking. And none has been gained only because no one so far has attempted to adopt the method. Meanwhile, conditions of organization of construction in rural areas have changed considerably in the past few years. This can be seen in Taldy-Kurgan Oblast. There a substantial portion of capital investment is concentrated chiefly in the hands of two clients--the oblispolkom's and the oblast agricultural administration's capital construction administrations. Their functional apparatuses are staffed by experienced specialists. On this basis it is not difficult to determine the single client--the oblast agroindustrial association.

Taldykurgansel'stroy Trust No 23 is building most of the projects in the oblast. It could serve as the head general contractor. Construction organizations under other ministries would also have a place in this system. The builders' present base, of course, would have to be beefed up.

But what do the organizers of the construction process think about this?

N. P. Bokan, deputy chairman of the Taldy-Kurganskiy Rayispolkom: "Flow-line construction on the basis of continuous planning would enable the rayispolkom to plan the development of the rural social structure more flexibly and build up the base of the rayon agroindustrial association more rapidly."

N. Ya. Bogomolov, deputy director for economics in Taldykurgansel'stroy Trust No 23: "We are willing to convert to this method. But questions of concentration of capital investment and continuous planning are handled by the oblast planning commission and the clients."

Ye. S. Sarbalin, chairman of the oblast planning commission: "We have not discussed this matter."

A. I. Gusev, chairman of the oblast agroindustrial association: "There are plenty of shortcomings in rural construction. The measures which we undertake to eliminate them often do not achieve their purpose. It is entirely possible that we will have to take up the Orel system."

Other opinions are also heard. The gist of them is that the Orel system of planning and administration of construction requires thorough organization-technical preparation of its participants. The builders of Taldy-Kurgan Oblast are not yet up to that level. First it is necessary to liquidate all uncompleted work and do away with all shortcomings and only then convert to the Orel "continuous method."

Of course, converting to the Orel method of construction in the oblast's rural areas is a bold and rather difficult task. Everything needs to be weighed and considered. At the same time, we cannot avoid dealing with the problem, for as CPSU Central Committee General Secretary Comrade Yu. V. Andropov stated correctly at the November 1982 CPSU Central Committee Plenum: "It is necessary without hesitation to turn to the resolution of new tasks, viewing them in close coordination with the fundamental directions of development of the agroindustrial complex, keeping in mind that we are dealing with a complex in which there are no secondary tasks."

It is necessary to work purposefully to resolve this problem on all levels of administration of capital construction both in the oblast and in the sectors.

This year the republic's Ministry of Rural Construction has begun preparations for the experimental conversion of Tselinogradelevatormel'stroy Trust No 1, Dzhambul'stroy Trust No 20, Dzhetysaysel'stroy Trust No 3, and Kokchetav'stroy Trust No 4 to the integrated flow-line method of project construction under a single client system. Such a beginning is encouraging. Everyone must support this valuable undertaking.

It is necessary to undertake this experiment in rural construction boldly. Only experience will make it possible to raise the quality of administration of the construction process to a new level. And it hardly makes sense to wait until all the "loose ends" are tied up. It is time to radically change the style of administration of the sector.

Fulfillment of the Food Program must not be delayed. All projects of the agroindustrial complex and the rural social infrastructure must be completed on time. Rural construction workers need to draw a useful lesson from the work practice last year and endeavor more decisively to eliminate shortcomings and perfect the style and methods of their work.

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## HOUSING CONSTRUCTION

### CONSTRUCTION MINISTRIES URGED TO SPEED UP HOUSING CONSTRUCTION

#### Improving Construction

Moscow STROITEL'NAYA GAZETA in Russian 6 Apr 83 p 2

[Article: "For the Good of the People"]

[Text] On 4 April an expanded session of the board of USSR State Committee for Construction Affairs was convened.

Deputy Chairmen of the USSR Council of Ministers and Chairmen of USSR Gosstroy I. T. Novikov gave a speech on the problems of implementing the CPSU Central Committee's decree "Concerning Measures for Ensuring the Fulfillment of the Plans for Building Housing Units and Social and Everyday Projects." Problems in meeting the civil and housing construction plans and its further development in light of the resolutions of the November (1982) plenum of the CPSU Central Committee and the speeches given at it by comrade Yu. V. Andropov were reviewed.

Candidate for membership in the CPSU Central Committee Politburo and Secretary of the CPSU Central Committee V. I. Dolgikh spoke at the meeting.

I. N. Dmitriyev, chief of a CPSU Central Committee Department, USSR ministers, responsible workers in the CPSU Central Committee, USSR Council of Ministers, USSR Gosplan, USSR Gosstnab and union republic gosplans and gossnabs took part in the board's work.

The communist party and Soviet government, said I. T. Novikov in his speech, is consistently and persistently conducting a course to improve the housing, social and everyday living conditions of the Soviet people. During the two years of the 11th Five-Year Plan alone housing units with a total area of 210 million square meters were put into use. New apartments, as a rule, have a better layout and improved technical equipment. The network of general education schools, children's preschool institutions, hospitals and polyclinics has grown significantly.

Along with this, as was noted at a recent session of the CPSU Central Committee Politburo and in a decree by the CPSU Central Committee, there are serious deficiencies and omissions in this important matter. The fact that the planned goals for erecting housing units and social and everyday projects were not fulfilled is intolerable. The volume of individual construction is being unjustifiably curtailed. There are quite a few instances of the incomplete planning and construction of industrial enterprises, and housing, social and everyday projects

which leads to considerable difficulties in completely providing production with qualified personnel and in developing capacities. The low quality of the construction, installation and finish work is causing serious anxiety.

The Central Committee of the party noted that a large part of the responsibility for the failure in fulfilling the plans is born by the construction ministry boards and the ministers personally who are ineffectively occupied with housing and civil construction and who do not consider it a matter of primary importance. Important omissions in realizing the plans and in improving the quality of civil and housing construction during the design and construction of cities and other populated areas are permitted by USSR Gosstroy, the State Committee for Civil Construction and Architecture and union republic gosstroys.

It is well known that in a number of cities expensive buildings that are not top priority in terms of need and high-rise housing units are being built and this is being done according to individual designs. All of this makes work more expensive and diverts manpower and means from mass housing construction. In pursuit of favorable figures certain administrators of local agencies often are obliged to accept housing units for use with unfinished work. A single client service is being developed slowly thus far. It has been organized in only 125 of the 289 cities.

It should be noted that the State Committee for Civil Construction and Architecture is not conducting a uniform technical policy persistently enough and the organizational work in the area of civil and housing construction has not achieved real control over the quality of the projects that are put into use and over observing the efficient use of an organizational structure and the density of the construction site. Certain departments in USSR Gosstroy are also ineffectively occupied with this.

Design and scientific research organizations and architects have been given an important role in ensuring that the plans for building housing units and social and everyday projects are fulfilled, said the speaker. Much has been done by them to turn out the required design and estimate documentation. However, there are still considerable potentials and possibilities here for further improving civil and housing construction and they must be used.

The State Committee for Civil Construction and Architecture, with union republic gosstroys, ministries and departments taking part, should, in the shortest period of time, review the set of typical designs, exclude those that are outmoded, and set schedules for adopting new ones while using advanced planning approaches and efficient components and parts in them which will make it possible to improve the quality of construction, reduce its cost and the consumption of materials and create a more expressive architectural appearance for the buildings and structures.

Construction ministries and departments, ministries and client departments and union republic gosstroys should accelerate the transition to advanced series of housing units and ensure a more rapid development of the set of modular sections at housing construction enterprises which are needed to improve the quality of urban development. The Construction Bank and Gosbank should take more effective measures to discontinue financing construction for projects which were abolished by USSR Gosstroy, the State Committee for Civil Construction and Architecture, and union republic gosstroys.

Continuing, the speaker examined the problems whose solution will lead to a reduction in the cost of civil and housing construction. This is a very important problem. Its solution will make it possible to free additional funds for mass housing construction. It is necessary to ensure the strict observance of the efficient structure and average cost of building housing units that have been approved for union republics and cities--in other words, to strengthen state discipline. Many excesses are still permitted here. In many cities there is an insufficient amount of large panel buildings in the housing structure even though they are cheaper than brick. They often get carried away locally with erecting high-rise housing units based on individual designs. The State Committee for Civil Construction and Architecture and union republic Gosstroys must already take control over observing the planned structure and cost of housing and the existing standards for the density of a construction site and systematically review them while taking into consideration the necessity of increasing the effectiveness of capital investments.

It is well known that a successful solution to the problems presented by the party depends a great deal on developing the industrialization of production and utilizing the existing capacities in large panel housing construction. Almost 500 KPD [large panel housing construction] enterprises are in operation in the country. They can turn out a complete set of components for erecting 60 million square meters of floorspace in housing units per year yet send only 45 million to construction sites. Can such a situation be accepted?

A program for the technical reoutfitting of each housing construction combine must be developed and implemented and labor productivity and the quality of the products being turned out must be improved. "Flexible" technology for manufacturing components and parts should be adopted more boldly during reconstruction. This will make it possible to transfer to turning out elements for erecting new types of buildings quickly and without great alterations in equipment and to make housing structures more expressive.

It is very important to ensure that the transition of large panel housing construction enterprises to the DSK [housing construction combine] system is accomplished in the next few years which will make it possible to reduce construction time, improve the quality of work and reduce the consumption of materials, labor and financial resources.

Special attention was given in the speech to problems of improving the quality of construction, installation and especially finish work. As is known, it depends on the knowledge and conscientiousness of the producers of the work and the foremen, the qualifications of the crew foremen and workers, the degree to which the processes are mechanized and the level of organization of the work. This is why it is important that all of these factors be considered at the very beginning of construction of each project. One cannot forget that the low quality of the housing units and social and everyday projects leads to a drop in the operating indicators, to an overconsumption of fuel, and, in a number of cases, to a loss of durability and stability for the load bearing components and even to accidents.

Special attention must be given to this because on the whole the quality of civil and housing construction is improving slowly; about 38 percent of the buildings are

being accepted with a "satisfactory" evaluation and in certain republics, krays and oblasts this indicator is even worse. Those who turn out poor quality products must be more strictly made responsible. The State Construction Inspection Administration and agencies in the State Architectural and Construction Control Administration in the State Committee for Civil Construction and Architecture and union republic Gosstroy should fully utilize the right given to them of stopping the construction of buildings and structures that is being done without approved designs, with a deviation from the design or with violations of the Construction Standards and Specifications. They must decisively suppress attempts at accepting projects for use with incompleting work and without the improvements to the surrounding grounds that have been specified by the designs.

The quality of civil and housing construction depends to a great degree on the quality and timely delivery of building materials, parts and components. Unfortunately, the USSR Ministry of the Construction Materials Industry and also the Ministry of the Chemical Industry, the USSR Ministry of Ferrous Metallurgy, the USSR Ministry of the Timber, Pulp and Paper, and Wood Processing Industry and other ministries are not completely satisfying demand.

The Ministry of Construction, Road and Municipal Machine Building and machine building ministries are not satisfactorily solving the problems of improving the technical level and reequipping large panel housing construction plants with advanced equipment and technological lines.

The speaker turned his attention to the necessity of taking additional measures to ensure that the available housing fund is preserved and modernized, and that the quality and technical level of capital repairs on housing units is improved.

In conclusion, comrade Novikov said that USSR Gosstroy, with the State Committee for Civil Construction and Architecture and other organizations whose interests are affected, have prepared a work program for reducing the cost of civil and housing construction, improving the level of its industrialization and saving materials and labor resources. Now efforts need to be directed toward successfully implementing the outlined improvement in civil and housing construction at the same time making suitable contributions in this matter, and toward implementing the social program for the 11th Five-Year Plan.

During the debate V. G. Yevtukh, chairman of the Belorussian SSR Gosstroy, Ye. N. Sidorov, deputy chairman of RSFSR Gosplan, B. R. Rubanenko, director of TsNIIEP [Central Scientific Research Institute for Experimental Design] for Housing, L. A. Bibin, USSR deputy minister of construction, N. S. Trofimov, first deputy chairman of the Moscow City Ispolkom, V. Ya. Isayev, first deputy chairman of USSR Gosplan, P. G. Zubov, chief of the State Architectural and Construction Control Administration in the State Committee for Civil Construction and Architecture, A. T. Polyanskiy, first secretary of the board of the USSR Union of Architects, V. M. Vid'manov, chairman of the board of the Russian Kolkhoz Construction Association, P. Ye. Yesipenko, deputy chairman of the Ukrainian SSR Council of Ministers, and N. T. Arkhipets, deputy chairman of USSR Gosstrib took part in the discussions.

A USSR Gosstroy decree directed toward further improving civil and housing construction was approved at the expanded meeting of the board.

CPSU Central Committee Decree

Moscow STROITEL'NAYA GAZETA in Russian 22 Apr 83 p 3

[Article: "From the Decrees of the Trade Union Central Committee Plenum"]

[Text] Accepting the CPSU Central Committee Decree as steadfast guidance and to be implemented as a program of practical actions in solving the most important social program, the plenum of the Trade Union Central Committee decreed that the most important tasks for the Central Presidium, the republic, kray, oblast and city trade union committees and the administrators of the appropriate economic agencies is considered to be the mobilization of creative and labor activity on the part of the sector's workers to implement the CPSU Central Committee Decree "Concerning Measures to Ensure Fulfillment of the Plans for Building Housing Units and Social and Everyday Projects."

The plenum committed the republic, kray, oblast and city trade union committees, together with the ministries, departments, and economic agencies, to intensify organizational work to enlist laborers, office, engineering and technical workers of organizations and enterprises in socialist competition and for the collectives of construction and installation organizations and enterprises to take on additional commitments to put housing units and social and everyday projects into use. The patriotic initiatives of Moscow construction workers to work under the slogan of "A high quality of construction is a worker's guarantee", the collectives of DSK-3 [Housing Construction Combine-3] in the Main Moscow Construction Administration, the Orekhovo-Zuyevo DSK in the Main Moscow Construction Administration, the agricultural housing construction combine in the Omsktselinstroy Administration, and the Orel'sel'stroy in the RSFSR Ministry of Agricultural Construction to ensure that housing units are built and put into use at a steady pace and with a guaranteed high quality and construction and installation organizations in the Ministry of Construction in the Far East and Transbaykal Regions with the slogan "High rates for housing construction" must be supported and spread in every way possible.

It was resolved to achieve a sharp reduction in lost working time and idle time for machines, mechanisms and equipment and to improve the rates of growth for labor productivity as a whole and for each type of work on the basis of extensively adopting a yearly workload for each crew and contract crew at all civil and housing projects, and completing the transfer of all crews at housing construction combines to operate according to the technological flow "enterprise--transport--construction site" by 1985.

The plenum emphasized the necessity of fostering among workers a feeling for the efficient use and economical consumption of raw materials, materials, fuel and energy resources, of decisively suppressing the uneconomical attitude toward the people's property and of actively enlisting laborers and office workers in an all-union public inspection of the economy.

The necessity of extensively adopting the achievements of science and technology in civil and housing construction, of increasing the level of its industrialization, of improving technology and increasing the production of new, advanced materials and components, of accelerating the transition to building housing from advanced series of housing units, and of completely utilizing the capacities of housing construction enterprises was called to the attention of USSR Gosstroy, the State Committee for Civil Construction and Architecture, union republic gosstroys, ministries and departments.

The importance of fully and more efficiently developing the means to personally build housing, cultural and everyday projects was emphasized. Their distribution among union republic ministries and departments, main administrations, industrial and production associations, combines, trusts, enterprises and organizations should be done on the basis of joint decisions by the economic agencies and appropriate trade union committees by taking into consideration the existing order of priority for obtaining housing, the number of specialists assigned, the demolition of barracks, the comprehensiveness of building industrial enterprises, housing, social and everyday projects and the importance of developing individual regions of the country.

It was suggested that the Central Presidium, and republic, kray, and oblast trade union committees in organizations and enterprises improve the effectiveness of public control over the pace and quality of building housing, cultural and everyday projects and over the output of high quality building materials and components and that they form trade union headquarters for this in organizations and enterprises and groups or control posts at projects and in shops; that they make the work of the housing and everyday commissions in the trade union committees more active and establish continuous communications with Soviet agencies, people's control committees, trade union soviets and committees, and architectural and construction control committees in order to work jointly to accelerate the construction and improve the quality of housing, social and everyday projects.

With the aims of further mobilizing construction workers to accelerate the construction of housing, social and everyday projects and to improve their quality the plenum charged the Trade Union Central Committee Presidium together with the ministers and departments to examine the problem of organizing a special type of All-Union socialist competition among housing construction and agricultural construction combines, and among the collectives of the main administrations for construction in Moscow, Moscow oblast, Leningrad, Kiev, Alma-Ata, Tashkent, Baku and other organizations that specialize in building housing units and social and everyday projects.

The plenum of the Central Committee of the trade union of construction workers and workers in the building materials industry called upon the economic and trade union organizations, and the laborers, engineering, technical and office workers at the construction sites and enterprises to accelerate the movement everywhere to unconditionally fulfill the plan and socialist obligations for building housing, social and everyday projects every year.

Concerning the Work of Economic and Trade Union Organizations  
To Mobilize Labor Collectives to Fulfill the Socialist Obligations  
Of Economizing Material Resources in the Building Materials Industry

In implementing the resolutions of the 26th CPSU Party Congress and the 17th USSR Trade Union Congress the USSR Ministry of the Construction Materials Industry, republic ministries, main administrations, associations, enterprises and trade union committees have taken a number of organizational measures to intensify the rate of economy and thrift. A special purpose program for saving material, fuel and energy resources during the years of 1981 to 1985 has been worked out and is being implemented by the ministry and Trade Union Central Committee. All-union conferences were held on these problems by USSR Gosstroy together with sector ministries and the Central Board of NTO [Scientific and Technical Society] for the construction industry and a special exhibit was organized at USSR VDNKh [Exhibition of USSR National Economic Achievements].

Bashkir, Belgorod, Bryansk, Kareli, Kemerovo, Moscow, Perm', Sverdlovsk, Tula, Chelyabinsk, Yaroslavl' and a number of other republic and oblast trade union committees are giving much attention to problems of economy and thrift.

The initiative of the "Rostovsantekhnika" Production Association collective that took on a commitment to save raw materials, fuel, electrical power, and other materials totaling no less than 100 rubles for each worker every year and also the nine leading crews who appealed to sector workers to expand competition for savings and thrift deserves to be widely spread.

Along with this the ministries of the construction materials industry, main administrations, industrial and production associations, enterprises, organizations and trade union committees have not achieved a fundamental improvement in the work to mobilize laborers in the battle for savings and thrift.

At many enterprises and heating installations fuel consumption instruments are lacking, equipment and pipelines are not satisfactorily insulated, there are places where deficiencies exist in utilizing the power and heating supply systems, and the directions of the controlling agencies are not implemented.

USSR Gossnab and the USSR Ministry for the Construction Materials Industry are solving the problems of organizing the collection of secondary raw materials, their sorting and delivery to processing enterprises slowly, and building materials from broken glass, waste paper, recycled textile materials, worn out tires and other resources are not being sufficiently used.

Many building materials are lost as a result of disturbing the technology of their production, poor quality, and when transporting them within enterprises or as deliveries to consumers without being in packages or containers.

Scientific research and design institutes are slowly working out theoretically new technological approaches that make it possible to save material resources that are in short supply and to more widely use the wastes and byproducts from other sectors of industry.

As before, trade union committees in a number of instances are conducting a weak battle against indifference and the lack of thrift and discipline, and are not uncovering internal potentials for economizing.

Guided by the resolutions of the 26th CPSU Congress, the 17th USSR Trade Union Congress, and the November (1982) plenum of the CPSU Central Committee, the plenum of the Trade Union Central Committee proposed that economic and trade union organizations in the building materials industry more actively work to mobilize laborers in the battle to fulfill the counter plans and socialist obligations to save fuel, raw materials, materials and electrical power, improve the level of organizational work, strengthen discipline, and efficiently use the means that are allocated for these purposes.

These are the goals--to more actively conduct an all union public review of the efficiency of utilizing raw materials, materials and fuel and energy resources; to expand the mass movement of laborers for savings and thrift under the slogan "Work economically without losses or waste."

It was decided to organize continuously ongoing seminars at production associations and enterprises in 1983 to train and improve the qualifications of masters, crew foremen and their substitutes at which new technical approaches and advanced know how for economizing fuel, electrical power, raw materials and other materials are regularly reviewed; to organize people's universities and communist labor schools in the economic education system to teach the course, "Thrift is a communist trait."

A resolution was passed to approve and widely spread the expertise of the collectives in the Angarsk cement and mining combine, the Sebyakovsk cement, Dyat'kovoz crystal, Ivot glass, Volgograd ceramic, and Borskiy glass plants, and the "Akmyantsement," "Rostovsantekhnika," and "Tulasantekhnika" production associations in the work to economize and efficiently use resources.

It was proposed that republic, kray, and oblast trade union committees and trade union committees in enterprises and organizations try to utilize the existing potentials for economizing and improve public control over the fulfillment of plans for adopting new technology, measures for savings and thrift and proposals for streamlining operations and inventions; to work out plans for creative cooperation between scientific research and design institutes and enterprises; to expand the practice of conducting public examinations of designs for new equipment and technological processes; to concentrate attention on improving the role of the standing commissions under trade union committees and trade union groups in strengthening labor discipline, improving the quality of products and production know how, and in fostering a careful attitude toward materials and equipment; to put into practice a weekly summary of the results of shifts and crews fulfilling their socialist obligations.

The plenum required the construction ministries and USSR Ministry of the Construction Materials Industry to ensure that capital expenditures are fully utilized, and that new and reconstructed production capacities at enterprises in the construction materials industry are put into operation on time which will determine the solution to the problem of reducing labor, material, heat and power consumption. And it requested that USSR Gosplan provide the necessary capital investments and

additional production of equipment for reconstructing enterprises in the cement, glass, brick, ceramic, sanitation and technical and other sectors of industry and also for the initial processing of various production waste products when reviewing the plan for 1984 and the subsequent years of the 11th and 12th Five-Year Plans.

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## BUILDING MATERIALS

### BSSR BUILDING MATERIALS INDUSTRY MINISTER REPORTS ON PROGRAMS

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 4, Apr 83 pp 24-27

/Article by V. Bil'dyukevich, minister of the BSSR Construction Materials Industry: "The Task of Each Day"/

/Text/ The republic's construction materials industry is constantly increasing the production of goods, while satisfying more completely the increasing requirements of the national economy for construction materials, lime fertilizers and drainage pipe and those of the population -- for various types of consumer goods.

We associate the dynamic development of the branch with the modernization and expansion of existing enterprises. During the current five-year plan, for example, approximately 75 percent of the resources at the disposal of the ministry have been allocated for this purpose. Accumulated experience reveals that technical reequipping and modernization make it possible to obtain the greatest return from invested resources within a shorter period of time and also to achieve better utilization of the personnel.

Many organizations have joined in the work of solving this task: the Minsk Scientific-Research Institute of Construction Materials, the Orgtekhstrom Planning-Design Organization, the Belstromremont Repair-Construction Trust, the Spetsremont Repair Administration and more than 30 scientific research and planning organizations throughout the republic and the country. In particular, close creative contacts have been established with a number of institutes of the Academy of Sciences for the BSSR. Thus, in accordance with works carried out by the Institute of Heat and Mass Exchange at the Minsk Gypsum Plant, the production of marble-like slabs from gypsum has been mastered. At the Oktyabr' Glass Plant, based upon works carried out at the Physics-Technical Institute, an electric-erosion method for preparing press-forms for the production of items from glass has been introduced into operations. The Glass Institute is developing a technology and equipment for the production of borosilicate and heat resistant pipe with a protective covering, the production of which is being mastered at the Gomel Glass Plant imeni M.V. Lomonosov. At the Smorgon'silikatobeton PO /Production Association/, an efficient technology for forming reinforced cellular concrete blocks, developed at the NIPI /Scientific Research and Planning Institute/ for Silico-concrete has been introduced into operations.

An acceleration in technical progress and the modernization and technical reequipping of enterprises are being carried out in strict conformity with plans developed earlier. These plans set forth the executive agents for the various types of work, the sources for financing, the schedules for producing the required equipment and so forth. Tasks are also being planned for each enterprise for achieving higher quality and quantity indicators in the production of goods and in the creation of the required socio-domestic conditions. If a need arises for new capabilities, then large-scale highly mechanized production efforts based upon the use of modern equipment and technology are created first of all.

More than 20 special purpose comprehensive programs have been developed. This includes in particular a program for raising the technical level of production and technical reequipping, the "Trud" program, a program for reducing the use of manual labor, a program for mastering the production of new and increasing the production of efficient construction materials and products, a program for achieving economies in the use of fuel-energy and material resources, a program for developing container and packaged shipments of construction materials and products and so forth.

The program for reducing manual labor, for example, through measures aimed at mechanizing and automating labor-consuming processes and the introduction of new and highly productive equipment and technological lines calls for a reduction of 1,500 workers engaged in performing manual labor and the conversion of approximately 1,100 individuals over from performing manual labor to mechanized labor. The carrying out of the measures called for in the program for achieving economies in the use of fuel-energy and material resources will be achieved through a reduction in the materials intensiveness of the products, the introduction of energy conserving technologies and use of the waste products of industry, the modernization of existing and the replacement of obsolete equipment, thermal insulation of all types of heating units, the use of secondary energy resources and improvements in the fuel combustion processes, in the standardization of norms and in accounting.

It bears mentioning that the most perceptible results in the technical reequipping of production were achieved in the brick branch. Attention is drawn to the carrying out of this work by stages. The use of ring furnaces was rejected during the first stage, since heavy physical labor predominated here, the work concerned with removing and placing the clay and lime brick on trolleys was mechanized and obsolete and physically worn out equipment had been partially replaced. During the second stage -- highly productive equipment was installed in the moulding-preparation departments and further mechanization of labor intensive processes was carried out. The third stage, which calls for the rebuilding of the drying economy, the creation of charge reserves, the complete mechanization of all labor-consuming processes and the conversion over mainly to the production of hollow bricks and stones is being carried out at the present time.

Typically, the modernization is being carried out as a rule with no halt in production operations or a reduction in the volumes of goods being produced. In connection with the implementation of special technical tasks, a solution is being found for the task of creating modern domestic facilities, dining halls,

medical stations and public services and amenities on the territories of enterprises. Housing facilities, children's pre-school institutes, clubs and so forth are under construction.

Without going into too great detail on the work being carried out, it can be stated with confidence that the tasks assigned to the brick branch have been carried out for the most part. Today this branch has 42 tunnel furnaces at its disposal in which 80 percent of the clay brick is being baked, whereas at the beginning of modernization approximately 90 percent of it was baked in ring furnaces. All of the silicate brick and more than 85 percent of the clay brick is removed by mechanical means. The production volume for hollow and facing brick has been organized and expanded. During the 10th Five-Year Plan alone, the average grade for ceramic wall materials increased by 7.7 kilograms of force per square centimeter and amounted to 108.7 kilograms of force per square centimeter. The output per worker increased from 130,000 to 145,000 units of conventional brick annually, which is higher than the average indicators for the country. As a result of the technical reequipping of the brick plants and the elimination of heavy manual labor, more than 1,000 individuals were made available for other work and the labor of more than 600 men mechanized.

With growth in the technical level of production, an increase took place in the professional training of workers in the brick industry. For example, the proportion of workers engaged in the repair and technical servicing of equipment increased from 18 to 23 percent and at leading enterprises -- to 36 percent. An increase took place in the number of workers possessing secondary educations and a trend was observed towards an increase in the number of specialists possessing secondary specialized and higher educations.

During the current five-year plan, modernization work will be carried out at the Brest Construction Materials Combine (with the organization of the production of double-layer facing brick), the Molodechno Construction Materials Combine, the Obol Brick Plant (with the organization of the production of hollow ceramic products), the Smorgon'silikatbeton Production Association, the Grodno Construction Materials Combine and a number of other enterprises. The plans call for maximum possible mechanization of all technological processes. Many-stringed cutting units, an automatic unit for removing drying frames and an automatic stacking unit for the drying trolleys will be included in a single moulding line complex. All of this will make it possible to increase the production of facing brick by 10 percent and the proportion of hollow brick and stones -- by 14 percent compared to 14 percent during the 10th Five-Year Plan. Measures are also being undertaken to mechanize the charging of clay brick. For example, at the Brest Construction Materials Combine -- by virtue of the conversion of a branch enterprise -- automatic brick charging units for the baking trolleys have been created and are already in operation. An automatic charging unit for the semi-dry pressing of brick has been introduced into operations at the Obol Ceramics Plant. Work is being carried out in connection with the development and production of automatic charging units for facing brick for the Minsk Ceramics Plant and ceramic stone for the Polotsk KSM /Building Materials Combine/.

It bears mentioning that the ministry, which has only one experimental-mechanical plant with a small logistical base at its disposal, is unable to

produce all of the mechanization equipment required. Thus, even though we have prepared technical solutions, we are still unable to produce in a timely manner all of the mechanisms required or to make them available to all of the enterprises. Here we have a great need for assistance from the republic's machine building enterprises. Otherwise a solution for the problem of mechanizing the labor-consuming processes will be dragged out. The mechanization of brick production is being held up by a lack of serially produced mechanization equipment, such as automatic charging units, packaging units and so forth. At one time, USSR Minstroydormash /Ministry of Construction, Road and Municipal Machine Building/ was responsible for organizing the production of this equipment. We are waiting for the ministry to outline specific measures for solving this alarming problem.

An object of daily concern is that of raising the quality indicators for the brick being produced and improving its frost resistance. Thus, at the Minsk Construction Materials Plant, based upon a recommendation by scientists, they began adding the waste products obtained from the moulding sand of foundry production to the clay bulk and this made it possible to lower the consumption of conventional fuel in the production of brick and to realize a savings of 1.7 rubles per 1,000 units of standard brick. At the Grodno KSM, granite siftings from the Granit PO /Production Association/ are being used instead of dehydrated clay. This had made it possible to raise considerably the frost resistance of the brick. The anticipated savings -- 4 rubles per 1,000 units of standard brick. We are expecting great results from the placing in operation of a modern and highly mechanized plant in the city of Radoshkovichi in Minsk Oblast. Its first phase will have capability of 75 million units of brick and will be placed in operation in 1984.

In discussing improvements in the brick branch, mention should be made of the problem concerned with the use of raw materials. A deposit of refractory clay located near Goryn Station in Brest Oblast is being exploited by the BSSR Minpromstroymaterialy /Ministry of the Construction Materials Industry/ and the Glavpoles'yevodstroy Trust of the USSR Ministry of Land Reclamation and Water Resources. The primary clay of this deposit is used for the production of facing facade brick and the secondary clay -- for the production of drainage pipe and common ceramic stones. It is our opinion that the Goryn clay should be used only for the production of facing ceramics. The drainage pipe requirements can be satisfied through the development of capabilities at enterprises of our ministry.

Technical progress is the basis for developing the production of items made from compact and cellular silica-concrete. At the Grodno KSM, for example, a department for the production of supporting panels made out of compact silica-concrete for the interior walls of rooms and pre-stressed panels for ceilings was placed in operation and is operating successfully. Cutting machines, percussion vibrating platforms and automatic systems for controlling the technological processes were introduced into operations at enterprises engaged in the production of silica-concrete products. The production of sound-absorbing and colored decorative "Silakpor" panels was mastered. This year the silica-concrete enterprises will produce 300-400 housing construction kits for rural workers. At the present time, approximately 600,000 square meters of housing space and approximately 1 million square meters of cultural-domestic and

industrial building space are being erected annually in our republic using silica-concrete materials. This is resulting in an annual savings of approximately 60,000 tons of cement and it is also lowering the materials-intensiveness of the buildings to a considerable degree.

The high rates of construction and the ever-increasing requirements with regard to architectural expressiveness in the buildings and the comfort level for the housing are raising a requirement for increasing the production of all types of ceramic tiles. The principal supplier -- the Minsk Construction Materials Combine -- the leading enterprise of the Minskstroyaterialy Production Association. A powerful design-technological service has been created at this association and a great amount of work is being carried out in connection with introducing scientific and engineering achievements into production operations. Recently, for example, five flow line-conveyer technological lines were introduced at the construction materials combine and a technology was developed for the glost firing of facing tiles using the horizontal method in a travelling oven with a cellular hearth. The experimental-industrial automated line for the production of facing tile is equipped with modern highly productive equipment. The principal type of product -- high quality facing tiles with tri-colored drawings for the interior finishing off of facilities.

In honor of the 65th anniversary of the Great October and 2 months ahead of schedule, capabilities for the production of 3.9 million square meters of ceramic tile annually were placed in operation at the Minskstroyaterialy Production Association. Today more than 20 different tile sizes are being produced here and the range of varying colors exceeds 100 types. The production of ceramic facing two-color and multiple-color tiles with drawings, large-size ceramic tiles for floors having various coverings (glazed, porphyritic, smoked) and others has also been mastered. Owing to the use of tower spraying dryer stoves for obtaining molding powder, practically all raw materials considered to be unsuitable for other conditions are being used in production. The production of facade tiles made out of local raw materials and broken glass has been organized at the Orshastroymaterialy Production Association and at the Brest Construction Materials Combine. Similar production operations are being created at the Rechitsa Ceramic Pipe Plant. The plans call for the new capabilities for producing facade tiles to be equipped with highly productive production lines. The production of all types of tiles will be doubled during each succeeding five-year plan.

Our republic presently occupies first place among other union republics in the production of window glass and high quality glassware per capita. This success is completely the result of scientific-technical progress. At the Gomel Order of Lenin Glass Plant imeni M.V. Lomonosov, for example, the furnaces were modernized and the production of high quality window glass and also hardened and furniture glass was mastered for the very first time in domestic practice. Capabilities were introduced here for the production of rolled safety and art glass. The labor-consuming processes associated with the processing of sheet glass and transporting it were completely mechanized.

The Borisov Crystal Plant imeni F.E. Dzerzhinskiy and the Neman Glass Plant were supplied with modern equipment and a leading technology. In particular, highly productive tank furnaces of continuous operation were introduced into

operations here. Successful use is being made of program controlled machines for processing items using a diamond edge. Labor productivity has increased by a factor of more than 2.3.

During the 11th Five-Year Plan, as a result of the technical reequipping of the glass industry, the plans call for the principal planned increase in production volume to be obtained with no increase in the number of production personnel. The production of pipe made out of borosilicate glass and having a protective cover will be organized at enterprises of the branch and increases will take place in the production of ornamental and hardened glass, in high quality glassware made out of glass and crystal and in glass-fibre mat for satisfying the requirements of land reclamation and glass container packaging.

The production of lime fertilizers and lime is developing at a rapid tempo. The modernization of technological lines is being carried out, "Aerofol" mills of a stronger design are being established and a complex of measures is being carried out aimed at improving the technology for producing dolomitic meal using ball mills. By the end of the five-year plan, three automatic systems for controlling the technological processes will have been introduced. It is hoped that these measures will make it possible to raise the production of lime meal bearing the state badge of quality to 95 percent compared to only 62 percent at the present time.

In developing the production of progressive materials -- one of the most important trends for scientific-technical progress in construction -- we are devoting special attention to increasing the production of stressed cement, which simplifies considerably the process of building concrete reservoirs and underground installations; layered roofing felt which makes it possible to accelerate considerably the hydro-insulating process for roofing; asbestos-cement pipe, vorsonite, safety, ornamental and furniture glass; large-size facade tiles, acoustic "Akmigran" tiles, twin-layered facing brick, marble-type gypsum tiles and linoleum on a fabric sub-base with two-color printing, protected by a transparent polyvinylchloride layer; large-size glass blocks. The production of other products will be mastered during subsequent years: ceramic sanitary-technical products, roofing felt with a sprinkling of color, flat pressed large-size slate, borosilicate pipe, linoleum on a warm base, new heat insulating materials based upon the use of perlite and other products.

We are devoting serious attention to the problems concerned with raising plant readiness and the completeness of the products. Panels made out of cellular concrete, for example, are being produced with architectural finishing off of the surface and they are being completed with panels made out of compact concrete for interior walls. All acoustical materials are being supplied complete with the elements and parts for suspended units. All of this is making it possible to reduce the proportion of manual labor in construction and to raise its productivity.

The ministry, in carrying out the decisions of the November (1982) Plenum of the CPSU Central Committee and in responding to press criticism, is also devoting serious attention to achieving economies in the use of material and fuel-energy resources. Thus the decision has been made to raise the production of hollow bricks and stones, by the end of the 11th Five-Year Plan, to 50

percent instead of only 25 in 1980. In this manner the consumption of raw materials will be reduced by 22-25 percent, fuel for the drying and baking of products -- by 8-10 percent and output production costs -- by a similar percentage. The use as a filler (instead of dehydrated clay) of siftings of granite crushed stone, which form at the Mikashevichi Combine for Non-metal Materials of the Granit Production Association, will also provide a considerable savings in fuel. Measures are being undertaken to further expand the use of industrial waste products which form both at enterprises of the ministry and also at enterprises of other branches. Increases are taking place in the volumes of use of secondary energy resources. Their use during the 11th Five-Year Plan will increase by a factor of 1.6 compared to the previous five-year plan and amount to 33,000 giga-calories annually, an amount equivalent to a savings of 7,000 tons of conventional fuel.

It must be confessed that by no means are all of the enterprises fulfilling the tasks assigned to them with regard to realizing economies in the use of material and fuel-energy resources. Moreover, some of them are tolerating over-expenditures of electric power and metal and are not fulfilling their tasks for lowering the specific norms for their consumption. Based upon this fact, measures have been developed which call for additional economies.

One particular problem bears mentioning. Today enterprises of the construction materials industry are supplying the builders in packaged form with clay brick, drainage pipe, "silakpor" tiles, approximately 90 percent of the ceramic tiles and other materials. The economic savings exceeds 1 million rubles annually. By 1985 the volume of such shipments will have increased by 35.7 percent compared to 1981.

At the same time, we are experiencing great difficulties with regard to the lumber and metal required for packaging. Our requests are being satisfied by only 40 percent. We are being supplied with steel packaging bands and corrugated cartons in only negligible quantities. Complaints are being addressed against the builders. For example, Minpromstroy /Ministry of Industrial Construction/, Minsel'stroy /Ministry of Rural Construction/ and Belmezhkolkhozstroy for the republic are not returning the packaging materials to us in a timely manner, they are tolerating losses in these materials and this is causing serious delays in the shipments of silicate brick, plate heaters and small blocks. The shipping of silicate brick in packaged form on specially equipped motor transport vehicles is also being developed very slowly. The fact of the matter is that the construction projects are still not being equipped with semi-automatic gripping devices.

The workers attached to the republic's construction materials industry are fully resolved to make a worthy contribution towards further raising the technical level and labor productivity in construction.

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## BUILDING MATERIALS

### MINISTER DISCUSSES BUILDING MATERIALS INDUSTRY'S TARGETS

Moscow STROITEL'NAYA GAZETA in Russian 22 Apr 83 p 2

/Article: "Large and Small Economies"/

/Text/ From a report by the minister of the USSR  
Construction Materials Industry A.I. Yashin.

Within the country's national economy, the construction materials industry is one of the largest consumers of natural raw materials, fuel, electric power and thermal energy, cement for processing into various products of a construction nature, metal, chemicals and so forth. From a cost standpoint, the material expenditures of the branch amount to 50 percent of the overall expenditures for the production of products and each percentage of economies in the use of these materials at enterprises of the ministry is considered to equal roughly 40 million rubles.

The organizational measures implemented in fulfillment of the party and governmental decrees for increasing the economies in the use of material resources include the creation within the ministry of a central branch committee for achieving economies in all types of resources. This committee systematically listens to the reports of republic ministries, main administrations and associations on the course of fulfillment of the established norms for the consumption of fuel, raw materials and other materials and also on the tasks that are approved annually for realizing economies in their use. Similar committees have been created within the republic's ministries. Many plants and production associations include permanent groups and posts for exercising control over the storage and efficient utilization of resources and over observance of the appropriate norms for their consumption.

For example, approximately 50 percent of the fuel-energy resources within the ministry's system are used by enterprises for the production of cement. Approximately 21 million tons of technological fuel are consumed annually for this purpose.

Over the past 10 years, the actual consumption of fuel for roasting 1 ton of clinker decreased by 11-12 kilograms and in 1982 amounted to 223.8 kilograms. But this is not enough. Although the majority of the plants are abiding by the norms, nevertheless the established task for achieving economies is not being fulfilled. A number of large-scale organizational-technical measures must be

carried out and particularly the energetic introduction of new technological processes.-- a dry method for producing clinker which will make it possible to realize a fuel savings in excess of 30 percent, a new low temperature technology developed by our scientists, an increase in the production of multiple-component cements, the use of special additives and others.

The ministry has developed an extensive program for converting the cement industry over to the dry method of production and this promises to provide a tremendous savings in fuel. However, more capital investments will be required. At the same time, it must be borne in mind that owing to existing conditions in the development of the cement industry in previous years, the wet method for obtaining clinker still prevails among us. Thus an extreme need exists for utilizing all opportunities for lowering the consumption of fuel at those plants (and they represent the overwhelming majority) which operate on the basis of this method.

Recently a great amount of work has been carried out in connection with lowering the consumption of fuel and electric power in the glass industry. A number of measures are being carried out at operating enterprises in connection with the thermal insulation of furnaces, the use of efficient arrangements for the combustion of fuel, the high-temperature cooking of glass and increasing the degree of regeneration of the heat of exhaust gases. Fuel consumption is also being reduced as a result of the utilization of secondary energy resources and improvements in the furnace designs, thus making it possible to raise their thermal kpd /efficiency factor/ from 20 to 35-40 percent.

A large amount of fuel is being consumed for the production of brick -- approximately 10 percent of all of the ministry's fuel resources. Despite all of the difficulties encountered in recent years in connection with developing the brick industry, a definite amount of work has nevertheless been carried out aimed at improving the production processes and equipping the plants in the interest of reducing the fuel and energy expenditures. More than 60 tunnel furnaces have been built and 55 furnace units have been modernized so as to provide zonal control over the roasting regimes. The experience of the Sverdlovsk Brick Plant in replacing the dome of a ring furnace with detachable thermally insulated plates and in mechanizing the charging and displaying of brick is being disseminated.

According to A.I. Yashin, the largest and most promising source for lowering fuel-energy expenditures in the production of wall materials is that of expanding the production of hollow brick and ceramic stones. It has been established that in the production of brick having a high degree of hollowness the consumption of fuel per 1,000 units decreases by 30 kilograms, not to mention the tremendous advantages afforded by its use in construction. We are undertaking measures to accelerate the production of this brick and we will strictly require those persons upon whom the development of plans and the organization of equipment deliveries and reproduction are dependent to be more responsible in carrying out their work. But I would like to take advantage of the presence here of the leaders of the construction ministries and state that a very large amount of work must be carried out during the 1983-1985 period in connection with the construction of almost 50 new brick plants. Growth in labor productivity in this branch, a reduction in material expenditures and the possibility of a sharp increase in the production of high quality effective wall materials are dependent upon this work being carried out. Unfortunately, it bears mentioning that the construction time for the plants being built is 5-6 years or more.

The creation of all-round and composite production efforts, with maximum use being made of secondary raw materials and industrial waste products, is of great importance for realizing economies in the use of material resources throughout the branch. For example, a definite forward step was recently taken in the work of utilizing the waste products of coal enrichment, particularly for the production of brick. However, when discussing industrial waste products and secondary raw material resources, mention should also be made of the fact that the volumes of their use are still substantially lower than the available supplies, despite the fact that these supplies are increasing from year to year.

Considerable economic results are being realized from the use of broken glass (our plants are processing more than 500,000 tons of it), waste paper, secondary textile materials, worn out tires and other resources. During the 11th Five-Year Plan, the use of these resources in the production of construction materials will be increased roughly by 20 percent. Their more extensive use is limited by shortcomings in organizing the collection of these raw materials and in their sorting and delivery to processing enterprises.

Over a period of a number of years, proper attention was not given to the development of the gypsum industry or to the effectiveness of products made from gypsum. At the present time, capabilities are being intensified for the production of gypsum board panels of improved quality, with a production of 23 million square meters being achieved in 1985. The production of gypsum requires heat expenditures which are several times less than those required for cement.

New capabilities are also being created for the production of gypsum-fibre board panels. However, the work carried out in connection with creating the production of progressive products made from gypsum is still completely inadequate.

It should be stated directly that an atmosphere of a high level of responsibility for economic and thrifty management has still not been created at a large portion of our enterprises. And the required results can be achieved only when this work is carried out at each working position, brigade, shift and department.

Recently, by a joint decision of the ministry's board and the presidium of the central committee of the professional trade union, the conditions of the socialist competition concerning an evaluation of the economic indicators for the fuel-energy and other material resources were defined more precisely. Only those who fulfill the norms for the consumption of resources and the established tasks for achieving economies in their use can be declared winners of the competition.

In conclusion, A.I. Yashin noted that that the year 1983 began with more favorable opportunities for ensuring that the enterprises are supplied with fuel and partly with transport equipment than has been the case in previous years. The industry fulfilled the plan for the first quarter in terms of all of the principal indicators. With a new burst of labor enthusiasm, the collectives of a majority of the enterprises and production associations are

competing to fulfill their tasks and high socialist obligations, including economies in the use of resources, undertaken for the third year of the five-year plan. But numerous problems still confront the planning and supply organizations and the builders.

We wish to work better and we are prepared to do so. However, only joint efforts can solve the important problems of efficient management and achieving economies at each working position.

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